The Journal
OF THE KANSAS MEDICAL SOCIETY

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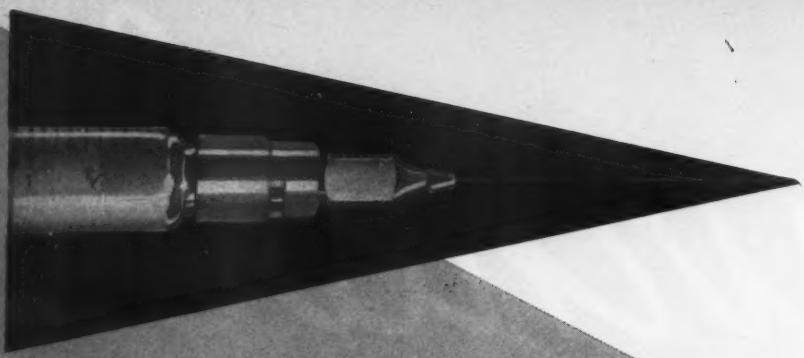

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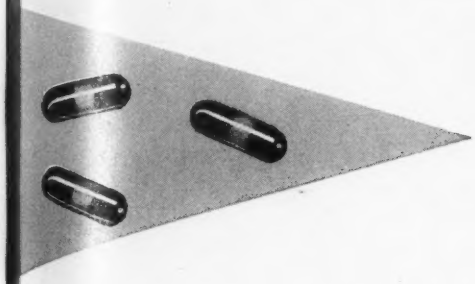

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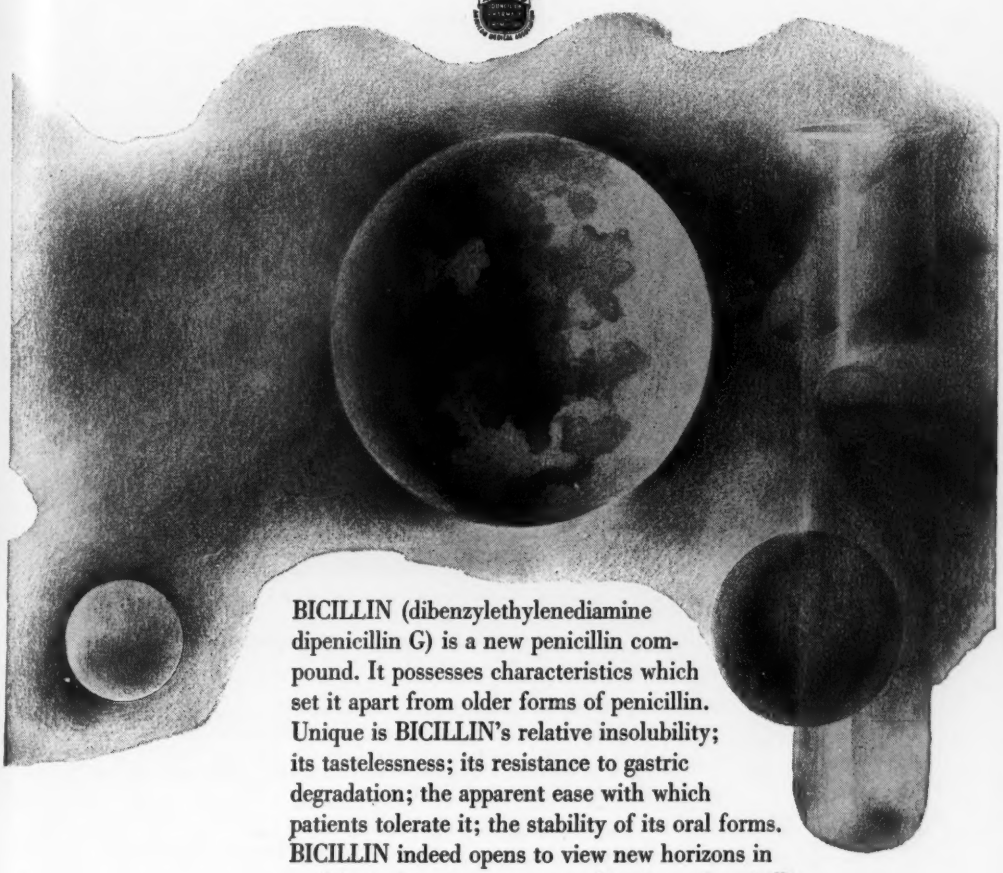

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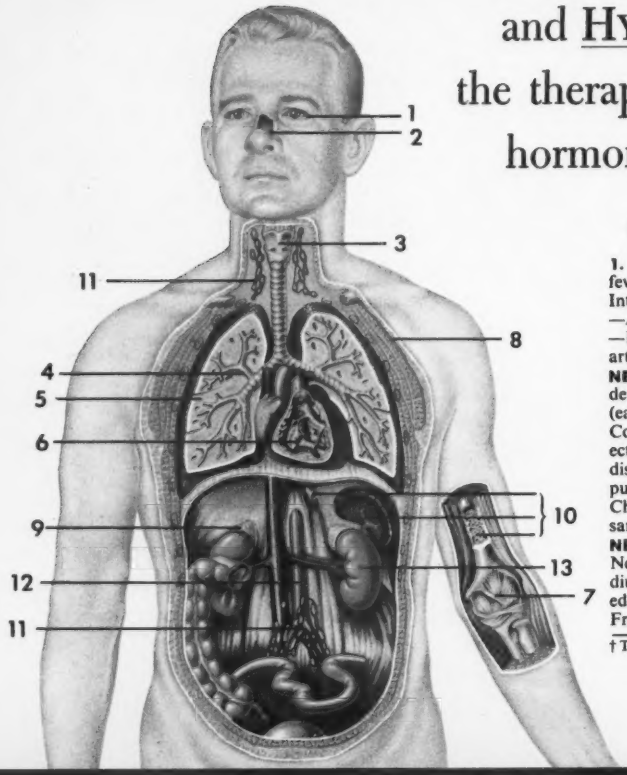

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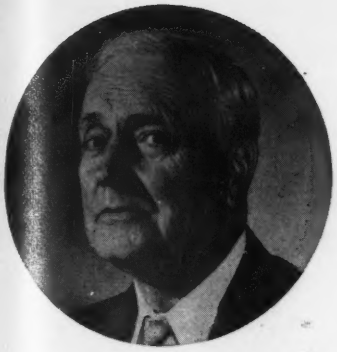

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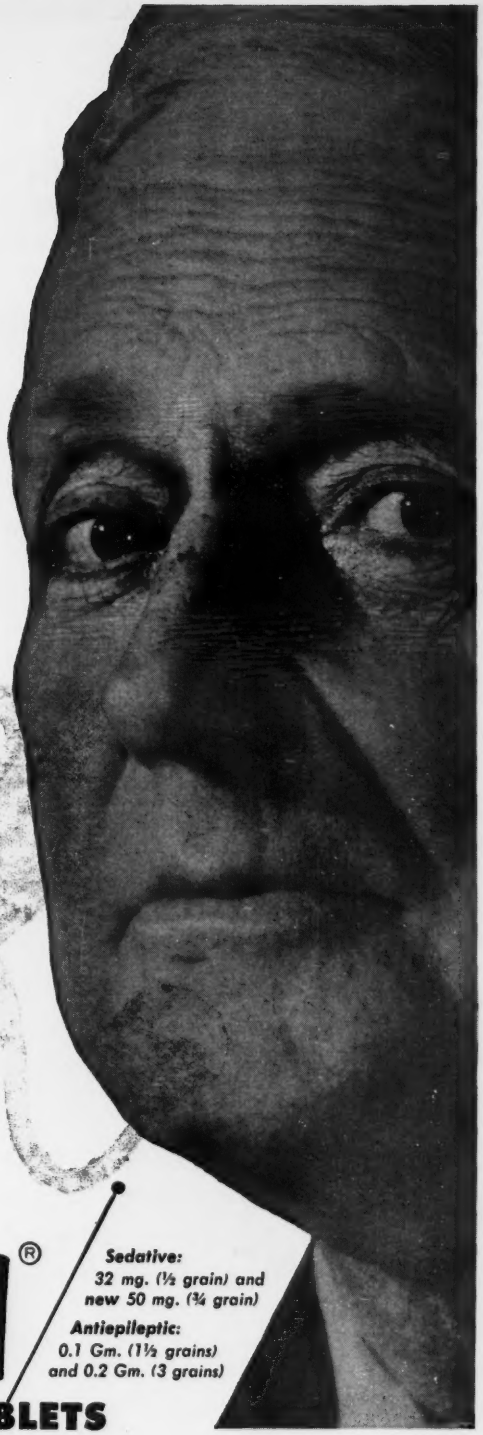

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Curbstone Consultation

Cat scratch disease consists of regional lymphadenitis with or without the formation of sterile pus, arising in the initial lesion. The disease is apparently due to a virus related to the lymphogranuloma psittacosis group.

Daniels & MacMurray, Ann. Int. Medicine, 37:697, 1952.

Pathologically Speaking

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The function of sodium is represented by: (1) It acts as a base; (2) it acts in maintenance of osmotic pressure of body fluid, and (3) it aids in preserving muscular irritability and permeability of the cells.

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Sodium in excess of the required amounts is lost in the urine for the most part. The kidney has excellent ability to control loss of sodium to a very high degree.

The metabolism of sodium is influenced by adrenocortical steroids.

One may encounter a positive or negative balance of sodium. A negative balance may be encountered in Addison's disease, abnormal loss in sweat, urine or diarrhoea via the alimentary tract. Often in patients who are given large doses of diuretics a negative sodium balance may occur.

A positive balance may occur from excessive salt intake or interference with excretion by the kidneys. The retention of sodium within the body will lead to water retention. Sodium may be increased after the administration of ACTH or cortisone. Some sex hormones may lead to sodium retention.

The relationship of electrolyte shifts is important for several good reasons. Many patients may be placed in danger with injudicious use of certain parenteral fluids. Symptomatology cannot be explained unless the electrolyte levels are known.

The clinical laboratory and the flame photometer offer the clinician aid in the study of patients with electrolyte imbalance.

(Reference: J. P. Peters; Body Water, C. C Thomas, Springfield, Illinois, 1935).

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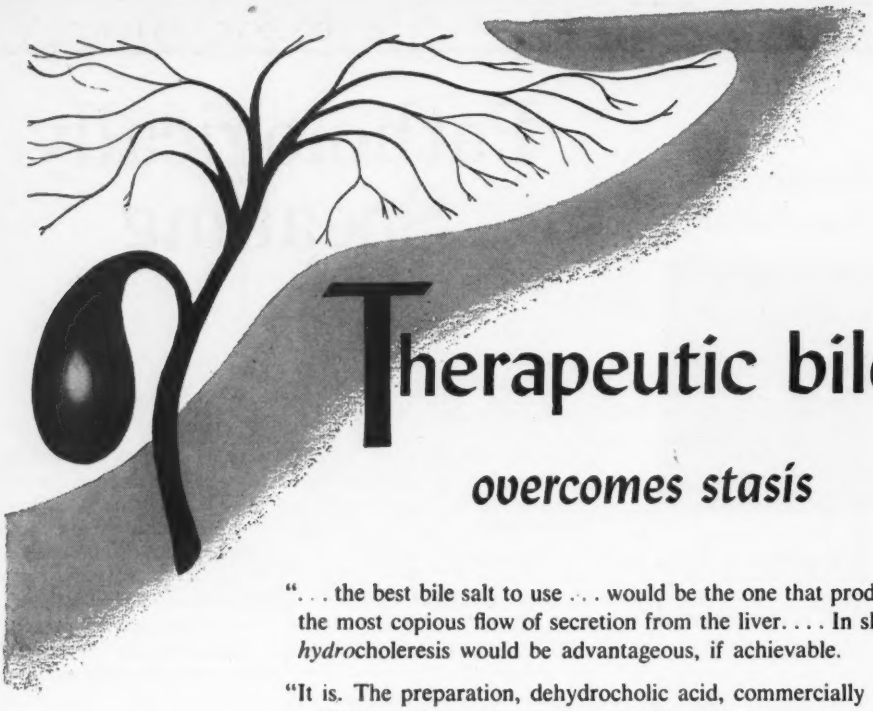

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*Beckman, H.: Pharmacology in Clinical Practice, Philadelphia, W. B. Saunders Company, 1952, p. 361.

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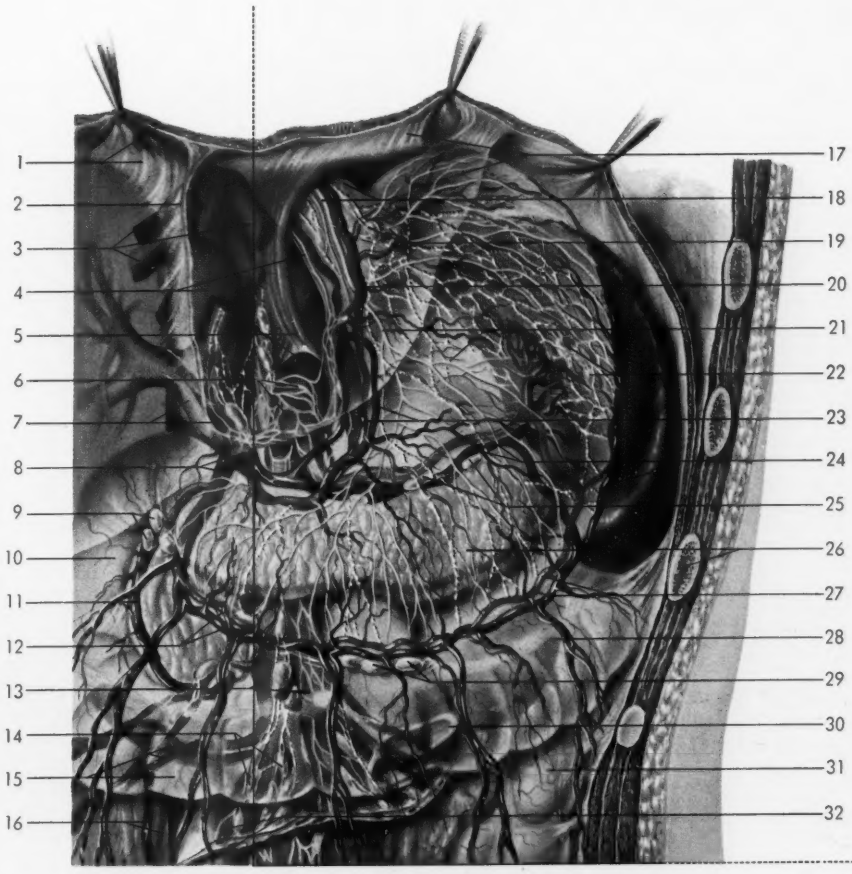
Upper Left Quadrant of the Abdomen



1 Diaphragm and coronary ligament
2 Falciform ligament
3 Hepatic veins
4 Inferior vena cava and right vagus nerve
5 Crus of diaphragm and abdominal aorta
6 Celiac artery and celiac plexus
7 Hepatic artery and portal vein
8 Gastroduodenal artery and vein
9 Subpyloric lymph nodes
10 Duodenum
11 Superior pancreaticoduodenal artery and vein
12 Right gastroepiploic artery and vein
13 Superior mesenteric artery and vein
14 Superior mesenteric lymph nodes
15 Transverse colon and right colic artery and vein
16 Spermatic artery and vein
17 Left triangular ligament and left lobe of liver
18 Esophagus and left vagus nerve
19 Paracardial lymph nodes
20 Esophageal branch of left gastric artery and vein
21 Gastric rami of vagus nerve
22 Splenic lymph nodes
23 Left gastric artery and coronary vein
24 Spleen and splenic artery and vein
25 Superior pancreatic lymph nodes
26 Pancreas and tenth rib
27 Left gastroepiploic artery and vein
28 Left kidney
29 Inferior gastric lymph nodes
30 Jejunum
31 Descending colon
32 Ileocolic artery and vein

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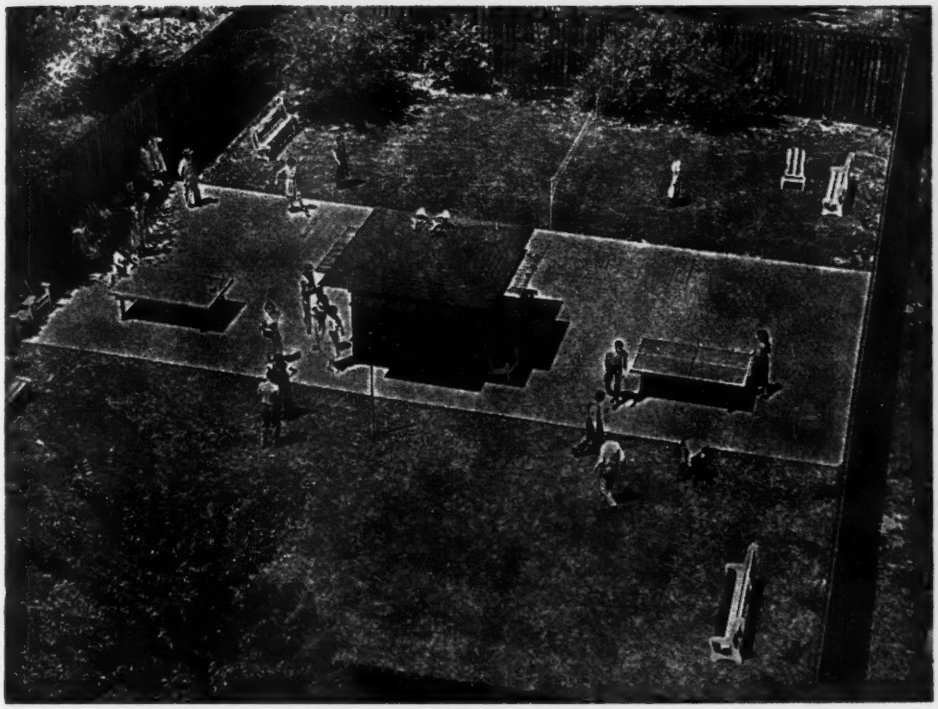

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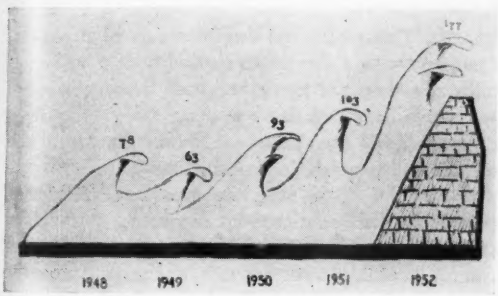
Poliomyelitis—A Selective Five-Year Review

H. O. Marsh, M.D.,* and Cline D. Hensley, Jr., M.D.*
Wichita, Kansas

The physicians of Kansas have been confronted each year with an ever-rising tide of polio which threatened seriously, in the past year, to swamp existing hospital facilities. The increasing enormity of the epidemics is reflected by the mounting census of acute polio on the St. Francis Hospital Orthopedic Service in the past five years (Graph 1). The year



Graph 1. The rising tide of polio.

1952 produced the worst storm of polio ever experienced in Kansas and in the United States. That storm has now blown itself out, and the brief lull before this summer's storm again breaks over our heads presents a propitious time to review some of the known facts of etiology, transmission, pathology and treatment.

There is little opportunity for reflective study and speculation once the storm is upon us, for then the burden of caring for the afflicted, calming public hysteria, and impassionate discussion of newspaper propaganda is so great that we, to function calmly at peak efficiency, must have well formulated plans and procedures with which to work. The formulation, condensation, and review of present day poliomyelitis theories and treatment provide the motivating force behind the brief analysis of the problem presented here.

At the turn of the twentieth century, "infantile" paralysis was a disease of infants. The vital statistics for New York in 1916 revealed that 80 per cent of the poliomyelitis cases reported were in patients under five years of age, while in 1949 the same state reported that less than 30 per cent of those stricken were in this age group. "Childhood" paralysis might well be a more fitting name for the disease as we now know it.

The attempt to put down in cold, analytical figures some of the general impressions gained through the years proved to be, after careful study, an impossible task. An increasing incidence of abortive and non-paralytic polio has been definitely in evidence and originated, no doubt, in the sharpening diagnostic acumen of all doctors to the milder symptomatology of this disease. In this series there was a distressing yearly increase in incidence among pregnant women. No one has, as yet, ascertained accurately the relative frequency of infection between pregnant and non-pregnant females; the reports in the literature estimating this ratio vary from 4:1 to 8:1.

The exact relationship that exists between the severity of paralysis and the patient's physical activity during the prodromal stage is an oft disputed point. The clinical impression of a definite cause and effect relationship existing between these two factors has slowly crystallized. In epidemic times the restriction of physical activity on the part of any child who is not up to his physical par would seem to be a wise and safe precaution. Protection

* From the Wichita Clinic, Wichita, Kansas.

by insurance against the economic loss occasioned by this disease has become increasingly common, and an estimated 30 per cent of the patients seen in 1952 carried this form of protection.

One of the most fascinating chapters in all the history of medicine and medical research is slowly but surely being written before our eyes. Under the combined forces of private research agencies, the National Foundation for Infantile Paralysis, universities, government supported research, and independent clinical investigators, the secrets of the etiology and transmission of this epidemic and endemic disease are being tracked down through the labyrinth of scientific fact and popular fiction.

The portal of entry into the human body for the infecting agent, one of the smallest viruses known, has never been satisfactorily settled. It is believed that the virus probably breaches the defenses of the body by the oral route because of the following facts. (1) Early in the disease, at least experimentally, the virus can be cultured at all levels of the gastrointestinal tract. (2) The virus can be isolated from the feces in 100 per cent of the cases of poliomyelitis during the first week, 70 per cent during the second week, 50 per cent during the third and fourth weeks, and, in a significant proportion, positive cultures continue through six to eight weeks. (3) The olfactory bulb rarely, if ever, harbors the virus—this would appear essential if the olfactory passage were the gateway for the disease. (4) The virus can routinely be cultured from oral-pharyngeal swabs during the first few days of the disease.

A major accomplishment was achieved two years ago when the existence of the three broad immunological types of virus was proved by studying 100 different strains of this organism. In this study, the Brunhilde type I represented 85 strains, Lansing type II represented 12 strains, and Leon type III, three strains. This multiplicity of virus strains and types serves to underscore the difficulty of developing a vaccine uniformly effective against all viral gradations.

That a viremia occurs in the course of this disease in man has only recently been demonstrated. Prior to the discovery of this missing link in the chain of pathogenesis, most investigators were firmly convinced that such a state must exist at some point in the disease and that the onset of the signs and symptoms of polio probably heralded the disappearance of the viremia, and thus this clinical state eluded detection.

The period of communicability of poliomyelitis has long posed a fascinating enigma for the epidemiologist. The best available information indicates that maximum contagion exists for three to five days, which period covers the latter days of the incubation period and the initial days of the acute illness. The incubation period varies within wide limits, the shortest reported time being 3 days and the longest 35 days; the average is 10.

Tonsillectomized children suffer a higher incidence of the disease, particularly the bulbar type. This fact should be borne in mind, for discretion would seem the better part of valor and tonsillectomies should, therefore, be postponed during epidemic periods.

Flies have been frequently and vociferously condemned by clinicians and investigators alike as the carrier and silent in-between host for the virus. Circumstantial evidence furnishes the only connecting link between the fly and the disease at present, as actual scientific proof has not sustained this accusation. Investigators recently succeeded in producing this disease in chimpanzees by feeding food contaminated by virus-carrying flies. A wide gulf looms between this experiment and the transference and application of this knowledge to human beings. This avenue of investigation must be much more completely explored before the role of the fly can be finally established.

Antibody tests have revealed that 80 to 90 per cent of adults have at some time suffered a clinical or subclinical attack of polio. The incidence of infection, therefore, is approximately the same as for measles. This establishes the disease as highly infectious but with a far lower morbidity rate and mortality rate than previously believed. Bearing in mind the above facts and the prevalence of positive fecal cultures in all members of a family in which one member displays the clinical disease, the wisdom and desirability of strict isolation and quarantine would appear questionable. Logically, a modified isolation technique might be more desirable, with careful handling and disposal of the contaminated feces and the prevention of droplet infection in nursing personnel during the first few days of illness.

The past two decades have witnessed the generation of an intense interest in polio, both in public and medical circles. This interest has been one of the primary forces responsible for the widespread experimental and clinical investigation into the pathology, pathologic-physiology and bacteriology of the disease. One of the least heralded, but to all thoughtful investigators the most important forward stride in this phase of the problem, has been the laboratory growth of the virus in roller tube cultures and in the developing chick embryo. Prior to this advance in our basic knowledge, at least two monkeys had been required for basic cultures. The cost of the animals alone imposed an almost prohibitive financial burden on general research, and the limited number of monkeys available further re-

strained, with iron bands, research within narrow limits. Such restrictions were swept aside with the fundamental laboratory discovery of these methods of culture.

The motor nerve cells of the cervical and lumbar enlargements of the spinal cord seem to possess a special susceptibility to the ravages of this virus. This vulnerability fostered a widespread false belief, a decade ago, that the infection was limited to the anterior horn cells of the spinal cord. This erroneous concept has been exploded, and we now know that other areas of the central nervous system may be damaged, not excluding the motor cortex of the brain. Damage to the hypothalamic areas and basal ganglia also occurs and probably accounts for the appearance of personality changes, nervousness, and emotional instability. In addition, the vital centers of respiration, circulation, and the nuclei of the cranial nerves located in the brain stem are all too frequently involved.

Bodian, working with primates, demonstrated that 30 per cent of a physiological unit of neural tissue must be destroyed before clinical evidence of paralysis or paresis is detectable. Clinical observation of critically ill children who recover after extensive temporary paralysis would suggest that this is true in the human being.

Polio must, therefore, be considered a generalized infection of the human body with an initial general infection of the gastrointestinal tract followed by a viremia and finally concentrating in the central nervous system. Here in the central nervous system the virus has a predilection for certain areas which bear the brunt of the assault. The early generalized involvement offers an adequate explanation for the frequency with which one sees a combination of spinal and bulbar symptoms in this disease.

Recent studies have demonstrated that patients stricken with the paralytic form of the disease develop neutralizing antibodies soon after the onset of symptoms. Three years later these patients still maintained a very high level of antibody titer against the particular type of polio virus that had caused their disease. Further studies of these individuals revealed the frequent presence of significant antibody titer against a second type of poliomyelitis virus. An antibody titer against one viral type, and occasionally two, was also discovered in the controls where no previous history of polio had been obtained. The logical conclusion follows, that if an individual has an antibody titer against two types of polio virus but lacks an antibody against the third type, that individual cannot be considered immune. A second conclusion also appears justifiable; a true, active, long lasting immunity develops following a definite clinical infection, and a similar immunization can probably be produced with a vaccine.

The diagnosis of polio during the height of an epidemic is often made too easily. In preceding years, an estimated error of 20 per cent has existed in the diagnosis of polio, according to our state public health authorities. This means that for each 100 cases admitted with the diagnosis of polio, 20 were suffering from some other mimicking condition. This experience is not peculiar to Kansas; two other states where careful post-epidemic studies were carried out have reported remarkably similar findings.

A 1948 analysis of 100 hospital admissions in West Virginia revealed that 23 patients were suffering from some disease other than polio. The Los Angeles County General Hospital admitted 304 cases of suspected poliomyelitis in the first six months of 1949. Re-evaluation after a few days sustained the diagnosis in only 149 cases, or 49 per cent. An epidemic of mumps was raging during this particular season, and many cases of mumps meningitis had been misdiagnosed. The presence of this epidemic, plus the usual diagnostic difficulties that exist, accounted for this low diagnostic accuracy. Such a remarkable parallelism of experience vividly illustrates that the difficulty of diagnosis is not limited to our state boundaries and should serve as a mental spur to remind us to keep our diagnostic guard up and constantly eye with suspicion all cases diagnosed as "poliomyelitis."

That the diagnostic error should be so high is readily understandable because of four facts. (1) Many diseases mimic polio closely, and the diagnosis is often debatable except in paralytic cases or cases in which antibody tests have been run on the blood. (2) The tremendous public pressure and hysteria which grip the nation more firmly each year produce an unfortunate combination of circumstances which the family doctor is almost powerless to hold in check long enough to evaluate each case from a differential diagnostic standpoint. Cases are frequently admitted to hospitals under these pressures before the diagnostic possibilities can be thoughtfully weighed. (3) Abortive and non-paralytic cases recover without the detection of a specific neuromuscular insult. This group contains many similar clinical entities which only the passage of time strips to their true colors. The ratio of abortive cases to the more severe clinical infections has been variously estimated, and one commonly accepted figure is 5:1. (4) The prevalence of polio insurance has also, unfortunately, exerted a direct effect on the diagnosis of polio. It is not economically feasible nor medically sound to ask the family to assume the financial responsibilities of hospital and medical

care if the presumptive diagnosis of poliomyelitis falls well within the limits of probability.

The early characteristic symptoms of polio are non-specific and familiar to all and consist of severe headache, general malaise, nausea and vomiting, sore throat, and muscle spasm with pain in the neck, back, and hamstring muscles. The early associated physical findings are characterized by a board-like rigidity of the neck and back, the positive straight leg raising test (Kernig sign), "head drop" on raising the shoulders from the bed, "tripod" sitting posture, and an early increase and later decrease in activity of the deep and superficial reflexes. Bulbar cases present the alarming findings of a change in vocal tone, difficulty in swallowing with a pooling of secretions in the throat, irregular respirations, and a restless, apprehensive patient.

Lumbar puncture and the careful analysis of the spinal fluid obtained furnishes presumptive but not conclusive evidence of polio. The white cell count is elevated during the first week of illness, except for 5 to 10 per cent of the cases in which no leukocytosis is found. The elevated cell count persists about 4 weeks, gradually returning to normal. The protein of the spinal fluid is consistently elevated, and this elevation is maintained for 8 to 10 weeks, persisting long after the leukocytosis has subsided.

The differential diagnostic considerations are of paramount importance if we are to avoid being trapped by the fallacy that all cases of a particular pattern in a particular season of the year are polio. We must be certain that a general infectious process, not polio, which will respond to specific therapy, does not slip through our fingers and fall back into the general diagnostic pool of polio, or that a tumor, cerebral or spinal, which admits of surgical correction is not overlooked. Therefore, the differential diagnosis must bring under the cold analytical light of medical evaluation such diverse conditions as tuberculous meningitis, brain tumor, lymphocytic choriomeningitis, Coxsachie disease, Guillain-Barre, hysteria (which in our experience occurs several times each year), peripheral neuritis, encephalitis, infectious mononucleosis, polyneuritis, and many others. Careful attention to the history, onset, and progress of the disease, the patient's physical and general appearance, and the results of the spinal fluid examination should differentiate these diseases except in the most obtuse cases.

Medical custom has arbitrarily divided the clinical course of polio into three states: the acute, the convalescent, and the chronic. There exists, however, no sharp dividing line for delineating these three periods of the disease. The acute phase of 7 to 14 days exists during the period of temperature elevation and is the time of crisis, the convalescent stage persists for the ensuing 18 months, and the chronic stage, thereafter. During the acute stage, the fate of the seriously ill patient sways in delicate balance between life and death, and the future physical handicap teeters precariously on the same delicate scales. This discussion will be limited mainly to the acute period.

Gamma globulin, regardless of our present thinking, will loom large on the horizon as a major factor in the medical therapy of polio in the next few months. This will be especially true if an epidemic in any way comparable to that of last year strikes once more. It is pertinent, then, to review a few of the problems and facts regarding gamma globulin now and prepare ourselves for the summer's issues.

If gamma globulin were to be administered to all of the estimated 40,000,000 children in the "polio age," approximately 40,000,000 bleedings would be necessary to obtain this quantity of material. One average bleeding of 500 cc. furnishes only 7 cc. of gamma globulin. The problem of procuring this multitude of donors, a Herculean task alone, is rendered additionally difficult when we consider that the required amount must be superimposed on the gamma globulin requirements for measles and infectious hepatitis. To satisfy this overwhelming demand, there will be available in 1953, from all sources, only 6,000,000 to 7,000,000 cc. of gamma globulin. This will furnish only 800,000 to 1,000,000 doses, calculated on the basis of an average of 7 cc. per patient.

This supply of the antibody-carrying portion of the blood is to be distributed through the State Board of Health working in close liaison with the Office of Defense Mobilization, the latter office coordinating and integrating the program for the whole of the United States. Present plans for state allocation are based on a formula of 40 cc. of gamma globulin times the median number of clinically diagnosed cases during the five years from 1947 through 1951. The material so allocated is to be used for the intimate contacts of clinically diagnosed cases. The major portion of the national reserve will be held for use in epidemic areas or emergency situations.

Hammon and his fellow investigators were careful to underscore, in their preliminary report on gamma globulin, the fact that immunity was not conferred during the first week following administration. The severity of the paralysis in children who developed the disease during this seven-day period may, however, have been modified. Clinical protection of a high degree was found to exist from the second week through the fifth week. The duration and level of immunity following the fifth week is conjectural, and a monumental task lies ahead to

determine how long a clinically useful degree of safety exists under the protective umbrella of gamma globulin.

We, as physicians, will shoulder a burden of public pressure this summer as the public seeks, without regard for scientific facts, this new safeguard. Each parent will demand for his child, without consideration for state or federal regulations, the one known polio preventive. The problem of gamma globulin will, fortunately or unfortunately, be solved in a great measure for us by the general lack of availability.

Almost without exception, clinical and experimental investigators in this field firmly believe that the final solution exists not in the development of a passive gamma globulin immunity but in the development of an active immunizing agent. This goal, they estimate, can be reached within two years. Salk et al have recently published some most encouraging work along this latter line of investigation. These investigators, working carefully with well controlled experiments, were able to produce with one vaccine a high level of antibody titer against all three types of polio virus in human subjects. The short term follow-up studies on these vaccines suggest that the antibody titer thus produced is comparable to that developing after a natural poliomyelitis infection both as to duration and level.

The virus used for this vaccine was grown in rolling tube cultures of monkey testicular or kidney tissue inactivated with formaldehyde and incorporated in a water-in-oil emulsion. This report is most encouraging, but we must temper our enthusiasm and heed the authors' warning that these results do not mean that a practical vaccine is at hand. Much more work is needed to establish the safety of such vaccines, to determine whether these results can be reproduced with certainty, and to establish feasible methods of producing safe new batches of vaccine.

The fundamental treatment of polio during the acute stage will continue, therefore, to rest on sound medical foundations whose footings go down to the solid bedrock of good supportive therapy. The patient's fluid and electrolyte balance is paramount in importance and must receive daily painstaking analysis. The blood potassium level has been of steadily increasing interest since the dawning realization of the essential relationship between this ion and vital body functions. Sedation is utilized when absolutely necessary, and phenobarbital has proved most effective. The symptomatic administration of salicylates, to control temperature elevations, and penicillin, to ward off intercurrent infection, is routine.

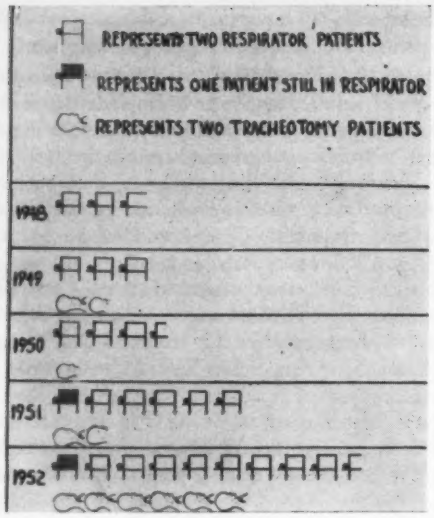
Kenny packs are utilized as soon as the child has been guided safely through the worst of the turbulent rapids of the critical stage. This is continued until the stiffness and pain have been relieved, and the packs have consistently proved their worth as the most efficacious method of relieving discomfort. The packs aid secondarily as a prophylactic measure in preventing joint deformities by necessitating the proper anatomical alignment during their application and use. Unremitting vigilance must be maintained over the positioning of patients, for contractures may insidiously appear and progress before your eyes. Pillow supports, foot boards, splints, and braces are called into service when additional help is needed to maintain correct anatomical relationships. Hydrotherapy in the Hubbard tank is instituted when the temperature subsides to normal, and the exercising of weakened muscles and the systematic stretching of tight muscles and joints are seriously undertaken at that time. Drugs for relieving muscle pain and spasm, such as Priscoline, Etamon, Prostigmin, and the curare-like drugs Tolserol or Mephenesin, have been dropped from our armamentarium after uniformly disappointing results.

The chest respirator, the rocking bed, the electrophrenic respirator, positive pressure breathing, tracheotomies, and postural drainage, in addition to the regular Drinker type respirator, have revolutionized the treatment of respiratory failure into a highly technical procedure. Careful consideration of this problem resulted in the formation of an informal polio team during the past epidemic to meet this challenge of increased technology. Each patient on the service was treated on an individual patient-physician relationship unless a serious problem of respiratory difficulty, deglutition, or maintenance of body health and nutrition over a prolonged period of time supervened. Confronted with a crisis of this nature, the group knowledge was integrated in order that all therapeutic measures of value would be available to the patient.

The orthopedic member of the group directed his attention toward the control of muscle spasm and pain, the treatment of incipient muscle contractures and joint deformities, and the prescription of supportive and corrective splinting.

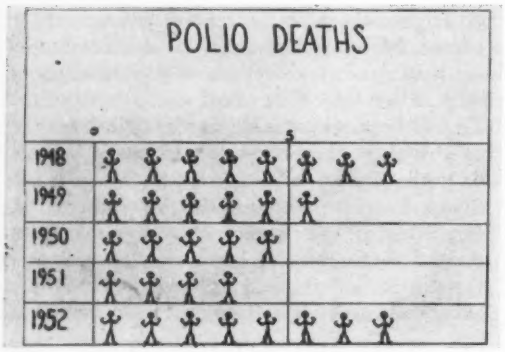
The internist or pediatrician supervised the regulation of fluid and electrolyte balance, adequate caloric intake, and therapeutic and prophylactic medications. The usually difficult decision of placing a patient in or weaning the patient from the respirator was decided by group discussion if at all feasible.

Tracheotomies, tracheal aspirations, and bronchoscopy were performed by a consulting otolaryngologist. The number of tracheotomies performed on this service during the past few years has increased (Graph 2) since Galloway et al published their excellent report in 1949. The mortality in our tracheotomized cases has been high, as would be expected



Graph 2

in such desperately ill patients, but gratifying life-saving results have also been witnessed. This procedure will continue to be used now that its worth is established, not as a last ditch, stop-gap measure, but as an aggressive therapeutic procedure. We have not experienced any deleterious complications from these tracheotomies, and we believe that this procedure has contributed materially to our declining mortality rate (Graph 3).

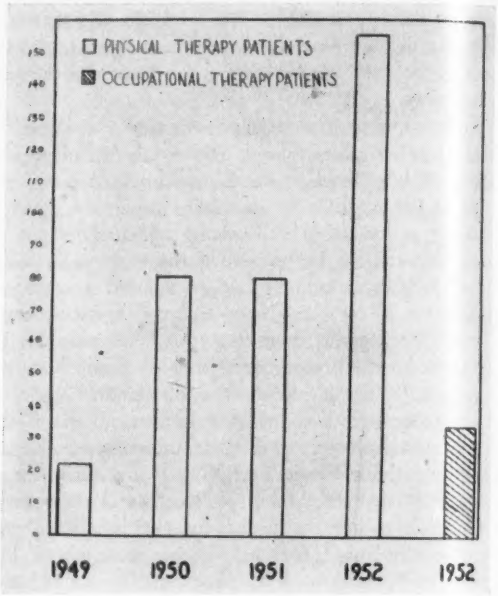


Graph 3

A urologist co-operated closely on a consulting basis as urinary disturbances were frequent. This resulted in a welcome drop in cystitis, urethritis, urinary retention, and other avoidable or correctable urological complications.

This close medical co-ordination has been extremely beneficial to the patients and has been highly satisfying to those working directly with these many-sided problem cases. A definite feeling of security develops with the knowledge that a co-worker is available who is specifically versed in any thorny problem that may confront the patient during the time of crisis.

The problem of rehabilitating the convalescent and chronic polio patients through physical and occupational therapy has mushroomed to ever-increasing importance (Graph 4). Careful muscle re-edu-



Graph 4

cation, muscle resistive work, protection of weakened muscles by braces and splinting, hydrotherapy, electrical stimulation, and a multitude of other devices are called into service to cajol weakened muscles to maximum strength.

Each handicapped patient, prior to his hospital release, must have his status carefully evaluated against the exacting daily physical requirements of home and wage-earning existence. Patients whose physical remnants prove inadequate to meet such demands must be helped by braces, crutches, and assistive devices and must be educated in special physical tricks to overcome these problems. Surgery may be of cardinal importance in solving a critical need after the physical handicap has stabilized. It is gross neglect and cruelty to discharge a patient with a pair of crutches and a set of braces without this fundamental rehabilitative preparation for daily life. This rehabilitation of the seriously handicapped is a prolonged and arduous undertaking which often extends over several years. The program is terminated when the patient has established his maximum efficiency by utilizing all the physical, medical, and psychological means available.

SUMMARY

Poliomyelitis, the dread summer disease of this nation, is assuming ever-increasing proportions. The age incidence among those afflicted has steadily risen and, correlated with this, there has been a high incidence of polio among pregnant women. Gamma globulin has, so far, furnished our only offensive weapon in the battle to save lives and decrease physical injury. A vaccine to immunize effectively against polio is a real possibility and will probably be available within two years. This development should effectively bring to an end the great polio epidemics that we have witnessed during the past 50 years. Technological advances in our basic knowledge of fluid and electrolyte balance, tracheotomies, respirators, rocking beds, and rehabilitative procedures have, so far, provided us with our finest defensive weapons. Adequate medical coverage of the seriously ill polio patient is best achieved by a team of physicians, each of whom has special training and interests in a specific facet of this complicated problem. This alliance of forces will result in lessening physical damage to those afflicted, increase the "salvage" of those severely handicapped, and decrease the number condemned to a life totally dependent on respiratory assistance and hospital care.

There has slowly developed over the past years a major medical need in Kansas for a polio center for those unfortunates shackled permanently to a respiratory aid. Each passing season has deposited a few more hopeless cripples on the present hospital load, and for this problem the existing hospital facilities were not conceived and are grossly deficient in trained personnel. Hospitals cannot remain yoked under this burden indefinitely, and a state center for these individuals has become a real necessity. The bright spot rising on the horizon of this whole picture of devastation and waste is the buoyant hope and belief that in the near future an active vaccine will be produced.

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"In essence, the struggle throughout the world today and in our own country is a struggle between two philosophies of government—between those who believe in government from above down and those who believe in government from the bottom up. Put another way: it's a struggle between those who put their primary faith and reliance in a few experts, supposed supermen government executives, and so forth, at the top, as against those who put their primary reliance and faith in the good sense and capabilities of ordinary people, if genuinely free. . . .

"A dictatorship exists when any man or group or bloc, even if it be a majority, imposes its will without any reservation of rights for the opposition, or the minority. A federation exists when people establish a mechanism whereby some group or party can come to power and govern, but certain rights are reserved for the opposition, including the right to try to become the governing group."

—Hon. Walter H. Judd, M.D.

All progress is made by men of faith who believe in what is right, and, even more important, actually do the right in their private affairs. You cannot add to the peace and good will of the world if you fail to create an atmosphere of harmony and love right where you live and work.

—Thomas Dreier

Renal Lithiasis and Recent Concepts in Treatment

Carl A. Wattenberg, M.D., and J. Byron Beare, M.D.*

St. Louis, Missouri

The etiological factors associated with the formation of renal calculi have been stressed more frequently in recent years by urological surgeons. With the high incidence of recurrent calculus formation it is a known fact that the surgical removal of the calculus is but one phase in the management of the patient with renal lithiasis. Therefore, unless the causative factor or factors are known and corrected, a high incidence of recurrent calculi will be the case. The following are some of the contributing etiological factors which need investigation.

Vitamin A and Dietary Deficiencies

There are certain geographic regions which are known as "stone areas." In these areas there is an absence or deficiency of certain essentials in the diet. Both clinical and experimental observations have demonstrated the relationship between stone formation and certain diet deficiency. Diet deficient in Vitamin A for an extended period of time is a known cause of stone formation in either or both kidneys. Studies for Vitamin A deficiency should be made in cases of renal calculus. Patients with a subnormal dark adaptation are suggestive cases.

Hyperparathyroidism

The relationship of hyperparathyroidism to renal calculi was first established in 1924. Braasch[1] found that hyperparathyroidism was the etiological factor in less than 0.2 per cent of the cases at the Mayo Clinic. In 1934, Barney and Mintz[2] reported a series of cases in which the diagnosis of hyperparathyroidism had been substantiated by surgical intervention. In 61 per cent of the cases, calculi were observed in the urinary tract. They concluded that hyperparathyroidism is responsible for about 4 per cent of the cases of renal lithiasis. In approximately 70 per cent of the cases of hyperparathyroidism, stones may be present, and in about 38 per cent the patient may have demonstrable pathological changes in the bones and urinary tract.

Maybe the actual incidence of hyperparathyroidism is higher than urologists have presumed in the past. An intensive study should be made in all patients with renal lithiasis to rule out the possibility of hyperparathyroidism as a causative factor. The levels of the serum calcium and serum phosphorus in the blood should always be determined. If there is an elevation of serum calcium and a lowering of the serum phosphorus, additional studies of calcium balance are indicated. The Sulkowitch test detects the gross presence or absence of hypercalcinuria, while a roentgenologic survey may reveal bone lesions compatible with the diagnosis of hyperparathyroidism. When the diagnosis is made, exploration of the parathyroid glands is advisable for the removal of the tumor, which is usually an adenoma.

Increased Urinary Calcium Excretion (Hypercalcinuria)

In all cases of renal calculi a study of the excretion of calcium in the urine should be a routine procedure. There are various factors which influence the excretion of calcium, depending on the amount of calcium and phosphorus ingested, the intake of Vitamin D, and the acidity of the acid ash in the diet. On a normal diet approximately 200 mg. of calcium is excreted in the urine daily. The excretion, when diet is low in calcium and phosphorus and the ash is neutral, varies between 100 to 150 mg. When the intake of calcium and phosphorus is increased, the excretion of calcium may attain 300 mg. daily. Patients who have or have had urinary calculi may show a high urinary calcium excretion while the blood calcium and phosphorus levels are normal. No exact cause has been found for this.

Infection

There is a definite relationship between urinary tract infections and calculus formation. In 1932, Bugbee[3] demonstrated the relationship between preexisting pyelonephritis and the formation of renal calculi. In some cases it is difficult to know if the infection was first and a stone developed—or whether a stone developed and was then the cause of the infection. Stones have been known to have bacteria in their nuclei. Complete bacteriological studies are essential in all cases of stones. In each case it should be determined if the organism possesses the power of splitting urea.

Focal Infection

In 1921, Rosenow and Meisser[4] demonstrated the specific ability of the streptococcus to produce urinary calculi. The pulp of dogs' teeth was inoculated with streptococci isolated from the urine of patients with calculus disease. Following this, calculi developed

* From the Urological Service, Department of Surgery, Washington University School of Medicine, and Barnes Hospital.

in the dogs, and the streptococci were isolated from the urine. In view of this finding, all foci of infection should be eradicated.

STASIS

Stasis is definitely associated with formation of renal calculi. Through stasis the urine is usually alkaline, and bacteria grow rapidly. Stasis should be corrected and eliminated during the operative procedure for stone removal.

METABOLIC DISEASES

Gout is a metabolic disease in which excessive amounts of crystalloids may be present in the urine. A patient with gout may form a renal calculus or experience a renal colic due to the passage of a small stone or showers of uric acid crystals. A blood uric acid determination is made in each case. Proper dietary management is necessary in these cases. Cystinuria is a familial disease caused by derangement of intermediate protein metabolism. Oxaluria, zanthinuria, and phosphaturia also can be the cause of stone formation in either or both kidneys.

RANDALL'S THEORY

Randall[5] showed that there were plaques of calcium salts deposited in the interstitial kidney tissue. At first they were covered with epithelium which shut them off from the cavity of the calyx, but later the epithelial covering was destroyed, exposing the plaques to the urine contained in the calyx. When this happened there was a tendency for urinary salts to be deposited on the plaques, thus forming a small calculus.

STONES IN PREGNANCY

Renal calculi can be produced experimentally by estrogen therapy. Therefore, it is thought that estrogens may have some relation to calculi in pregnancy.

RENAL LITHIASIS IN RECUMBENT PATIENTS

Urinary calculi often are found in persons suffering from bone injuries, or other conditions requiring immobilization for prolonged periods. Generally, these calculi are renal in origin and tend to be bilateral. This immobilization usually causes the stones to develop because of impaired urinary drainage, with or without infection, and produces changes in the calcium metabolism. Jones and Roberts[6] (1934) showed that immobility causes local decalcification of the bones, and demonstrated by x-ray that generalized disuse depletes the calcium of the bones. It seems, therefore, that renal stones in these cases are the result of skeletal decalcification, and are comparable to stone formation seen in connection with hyperparathyroidism.

PATHOLOGY OF STONES

The most common type of renal calculus laid down in sterile urine is the crystalline oxalate stone. It is a light brown color, is dense and hard, and is covered with sharp shining crystals. Uric acid and cystine calculi are also formed in sterile urine, but are rather rare.

The most common calculi formed in infected urine are the phosphatic. They are a dirty greyish-white color. They are more friable and grow more rapidly. Stones composed of calcium carbonate are rare, although small quantities of this salt are found in many phosphatic calculi. These are white, hard and dense.

The most common type of renal stone is the mixed phosphatic and oxalate calculus. It can occur in infected or sterile urine. All stones are more or less a mixed type.

Soft concretions can be found but are rare. Some of the concretions are fibrin, amyloid concretion or bacterial calculi.

Urinary calculi can be of two types—those formed in alkaline urine and those formed in acid urine. The phosphate and carbonate stones develop in an alkaline urine, the oxalate and uric acid in acid urine.

SYMPTOMS

Stones in the upper urinary tract give different symptoms which in part depend on the existing pathological condition, such as obstruction, local irritation, and associated infection. Stones in a kidney which do not cause obstruction may attain a great size and result in serious kidney damage before they are discovered. A stone which is migrating or which causes an obstruction at the uretero-pelvic juncture or in the ureter will cause severe symptoms. This severe pain is known as "renal colic." The onset is usually sudden, severe, and agonizing. This pain is in the flank area and can radiate across the abdomen, upward or down along the course of the ureter.

Various reflex symptoms are observed. They are most common when the pain is severe. There may be a fall in blood pressure, the skin can be pale and covered with cold sweat, and the pulse thready, small and rapid.

Another group of symptoms may be referred to the gastro-intestinal tract. Nausea and vomiting are common. Constipation or diarrhea can occur, and often one finds a diffuse abdominal distention. A great deal of gas is seen in the intestinal patterns on the plain film of the abdomen.

Other reflex symptoms are an increased frequency of urination or pain in the genitalia. A renal colic usually lasts a few hours and continues in a milder state for several days. During the intense pain, an injection of morphia or some other sedative is needed. The urine usually contains a little blood. Hematuria

is an important sign, as it generally indicates that the pain is renal in origin.

The most common and typical pain from a renal calculus without infection is a dull fixed pain in the loin. The pain is increased by exercise or jolting and often relieved by rest. The urine often shows some blood.

The symptoms of an infected renal calculus are pain of varying degrees in the loin, urine showing blood with pus, and perhaps temperature elevations. Therefore, the most constant complaints are of pain, hematuria and pyuria.

EXAMINATION

Symptoms referable to the gastro-intestinal tract, loin aches or colic, and the presence of red blood cells and pyuria warrant a complete urological study. Symptoms typical of renal calculus are missing so often or may be so mild that many patients have been subjected to unnecessary appendectomies and gall bladder operations, or even explored for a supposed intestinal obstruction which was due to a reflex ileus from a stone.

A complete urological investigation includes a careful history, physical examination, urinalysis, plain roentgenogram and pyelograms with cystoscopy. Approximately 10 per cent of small renal calculi are not visualized in plain films. Therefore, for more complete information, intravenous urography is essential or cystoscopy with ureteral catherization and pyelography. One should know the functioning ability of each kidney, as well as the extent of pathological change in each, and the anatomical type of kidney. A stone may be present in one kidney while the other kidney may be hypoplastic, ectopic, seriously injured by some disease, or a congenitally anomalous kidney. Roentgenographic examination and pyelograms should include both kidneys.

The treatment of renal lithiasis is both medical and surgical. The aim of medical treatment is to help with the elimination of the calculus, to prevent a recurrence, and to cure infection. Surgical treatment consists in removing any calculus that may be too large to be eliminated naturally, in correcting any anomalies that may cause stagnation and secondary stone formation, and in removing seriously diseased or destroyed kidneys. Therefore, after an operation for stones the patient should be put on a course of medical treatment. This postoperative medical management should include maintenance of a large fluid intake, eradication of infection in the urinary tract, elimination of foci of infection, correction of metabolic diseases, increased amounts of Vitamin A, parathyroid studies and exploration if indicated, dietary management, and study of the pH of the urine. For calculi composed of phosphates and carbonates, the high Vitamin A acid ash diet is needed. For uric acid, cystine and xanthine calculi, the high Vitamin A alkaline ash diet is prescribed.

The solvents used most in the dissolution of calculi are the Suby's[7, 8] solutions M or G. These are solutions of sodium carbonate, citric acid, and magnesium oxide. A great deal of work has been done on stone solvents and, although some isolated dramatic results have occurred, the use of solvents to effect a complete removal of the stone generally has been disappointing. Usually a kidney irrigated with a stone solvent will stop functioning, and it is important that one normal kidney is present when irrigations are being carried out. Almost all patients complain of some pain in the kidney during irrigation, and infection becomes more pronounced. Our experience with the stone solvents has been that of unsatisfactory results.

Of the commoner types of renal calculi, the phosphatic variety remains one of the most difficult to manage. A new useful treatment which has proved effective consists of the use of aluminum hydroxide gels[9] to bring about alterations in the chemical composition of the urine so that it will be unfavorable for the precipitation of the phosphate ion. The rationale for this regimen resides in the formation of insoluble aluminum phosphate salts in the intestinal tract and the corresponding reduction in the amount of phosphorus available for absorption. This diversion of phosphate excretion via the intestinal route results in a proportional diminution in the amount excreted in the urine.

SURGICAL TREATMENT OF RENAL CALCULI

Nearly every stone that is too large to be eliminated naturally ought to be removed surgically. Surgical removal can be urgent in conditions such as anuria, acute infection, renal hemorrhage, or disabling renal colic. Surgical procedures are elective if there are few symptoms and very little disability or kidney destruction. However, postponed kidney surgery can produce more kidney destruction. Any calculus that causes infection and obstruction definitely should be removed. The question often arises whether a silent calculus, which is practically symptomless, should be removed surgically. This calculus should be observed carefully by x-ray plain film, and the symptoms it produces should be studied. Occasionally a larger stone is removed with less kidney damage than a small stone which can move from calyx to calyx and be difficult to locate during operation. There is considerable discussion as to whether or not a staghorn calculus, particularly a bilateral staghorn calculus, should be subjected to surgery. If there is little kidney destruction and good kidney function with not much infection, we prefer to adopt the policy of watchful waiting.

PYELOTOMY

Operation for the solitary calculus in the renal pelvis is probably the simplest procedure of all, except where there is a small intrarenal pelvis. If this is present it may be necessary to do a nephrotomy. However, stones in the pelvis usually may be removed through a posterior pyelotomy incision as shown in Figures 1, 2, and 3. The surgeon has to be careful not to break a stone and leave a fragment to become a nidus for a recurrence. If the pelvis is of a fair size and extrarenal in type, one can make a sufficiently large incision so as to palpate the pelvis and calyces. Care must be taken not to leave a smaller stone not visualized in the x-ray films. After extraction of the stone, the kidney pelvis should be lavaged with a syringe (such as a Gibson type) so that small blood clots, debris, or stone fragments can be washed or suctioned out.

Figure 1. A plain film of abdomen showing two large stones in region of right kidney. Ureteral catheters to each kidney are seen.

Figure 2. Bilateral retrograde pyelograms showing hydronephrosis and extrarenal pelvic dilatation right. Two stones are seen in the pelvis on right.

Figure 3. Drawing illustrating a posterior pyelotomy incision for removal of stone or stones from a kidney pelvis.

When doing a pyelotomy for a stone, we prefer not to free the entire kidney and displace it from its bed. Usually we expose only the lower pole and pelvis, thereby leaving the upper pole undisturbed in order to prevent additional trauma to it. If the entire kidney is freed, a nephropexy may be necessary to keep the kidney in good position. A search should be made for an aberrant renal vessel, stricture or nephroptosis, and, if found, it should be corrected. Closure of the pyelotomy is made generally with fine atraumatic catgut, and the incision is closed with drainage.

NEPHROTOMY

When there is present a branching calculus, or a calculus imbedded in a calyx, a nephrotomy usually

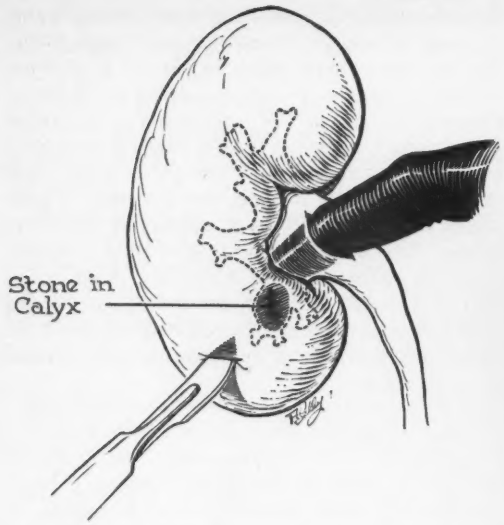

Figure 4. Drawing shows a calculus imbedded in a calyx and a nephrotomy being performed for the removal of the stone. A finger often can be inserted through a pyelotomy to locate the stone.

is performed as shown in Figure 4. During this procedure, the kidney generally is more completely freed than for a simple pyelotomy. This is true especially if the nephrotomy is extensive and one needs to control bleeding by pressure on the renal pedicle. Nephrotomies are most often performed on the convex aspect of the kidney along the so-called avascular line of Brodel. An extensive nephrotomy is done when removing a unilateral staghorn stone as seen in Figures 5 and 6. Occasionally, there are several smaller calculi present in different calyces, and several nephrotomies may be necessary. Care must be taken to prevent breaking the stone during its removal.

Figure 5. Plain film of the abdomen showing a ureteral catheter to each kidney in place, and a staghorn stone present in right kidney.

Figure 6. Bilateral retrograde pyelograms showing a staghorn stone in the right kidney pelvis and a normal left kidney.

When calculi are difficult to locate, the kidney may be needled and a stone is sometimes located. A roentgenogram should be taken just prior to surgery

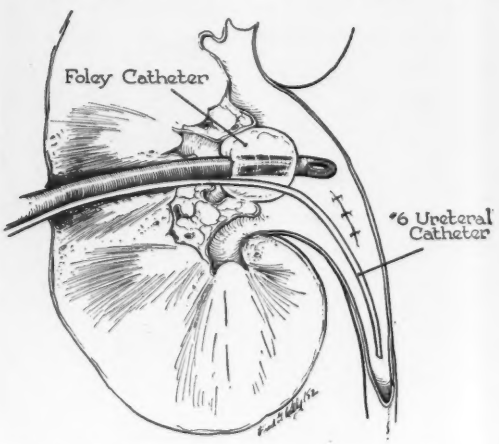

Figure 7. Drawing which shows a nephrostomy tube, and a ureteral catheter passed through the nephrostomy and down the ureter as a splint.

so as to be certain a calculus has not moved into the ureter. Facilities should be available for x-rays of the surgically exposed kidney. The calculi removed should be compared with those shown on the preoperative x-ray films to be certain no pieces have been overlooked.

The closure of nephrotomies is made with atraumatic mattress sutures which are approximated over pieces of fat or muscle to prevent tearing of the renal capsule. Ribbon gut, gelfoam and oxycel are used and preferred by some.

NEPHROSTOMY

After a nephrotomy, we usually place a number 6 ureteral catheter through the nephrotomy opening and down the ureter to act as a splint and not allow the ureter to kink or become adherent and obstructed against the kidney. Also, we always put in a catheter through the nephrotomy opening into the kidney pelvis such as a nephrostomy. Each of these catheters is brought outside the wound, and the wound closed around them (Figure 7). The ureteral catheter is coiled and taped to the patient under the dressing and allowed to drain into the dressing. The nephrostomy tube is cut off to leave two or three inches protruding beyond the wound and is also taped to the patient and allowed to drain into the dressing. If the catheters are connected to a bottle, they usually do not drain satisfactorily or are pulled out when the patient turns over. Sometimes one can irrigate through the nephrostomy tubes with one of the stone solvents as shown in Figure 8.

Figure 8. Film showing a nephrostomy catheter in a kidney pelvis which contains sand and stones. Nephrostomy tube has been injected with non-opaque dye after being irrigated with a stone solvent.

NEPHRECTOMY

Conservative surgery is the rule in treatment of any renal disease. However, a nephrectomy is required when only one kidney is so extensively and irreparably damaged that it is useless as a functioning organ (Figure 9). The remaining kidney must have good function. Often one cannot make the final decision for nephrectomy until after surgical exposure and exploration.

Figure 9. Photograph showing a destroyed kidney and many stones present.

HEMINEPHRECTOMY

Heminephrectomy or partial nephrectomy is indicated when a stone, accompanying infection, and destruction of kidney tissue are confined to one pole of the kidney. This disease process is found most often in a dependent calyx. The kidney substances are approximated with mattress sutures over pieces of fat or muscle tissue. We prefer the use of the latter.

MANAGEMENT OF BILATERAL RENAL STONES

Bilateral stones always present a serious problem because of the accompanying decreased function in each kidney. Conservative surgery is important under these circumstances. Operation on both sides at one time is seldom advisable except when rapid bilateral nephrostomy is necessary. This is needed when large stones are present with infection or when stones are obstructing both uretero-pelvic areas. It is now generally agreed that the patient with large bilateral calculi filling the renal pelvis on both sides is best left alone; he will live longer without operation than with operative interference. However, patients with less extensive bilateral renal calculi may be benefited

by surgical removal of the stones. There is a high incidence of recurrence in these patients.

Generally speaking, when an operation on both kidneys is indicated, it is preferable to remove the stones from the kidney showing the better function and least damage first. When the patient has recovered from this procedure, the other kidney is operated upon. Should exposure of the poorer kidney reveal conditions requiring a nephrectomy, the surgeon may remove it in the comforting knowledge that the other kidney is functioning well and has been repaired. Nephrectomy should be done only under exceptional circumstances, as when one kidney is functionless and absorption from it will affect the other kidney.

REMOVAL OF STONES FROM A SOLITARY KIDNEY

Stones in a solitary kidney can be hazardous. Operation should be done with special care and with little trauma to prevent kidney injury. The kidney should be mobilized as little as possible.

STONES IN PREGNANCY

When stones are discovered in pregnancy, conservatism is the rule (Figure 10). If the stone is large, it usually can be observed and removed at four to six months postpartum or when the requirements of lactation are not necessary (Figures 11 and 12). If the stone is small and causing obstruction, a catheter for drainage should be tried before operation is decided upon.

Figure 10. Plain film of abdomen showing nearly a full term fetus and stones in region of right kidney.

CONCLUSION

The management of a patient with renal lithiasis is a complex problem, and surgery is but one phase.

Figure 11. Postpartum x-ray film of same patient as in Figure 10. Catheters are seen in place; stones in right kidney area.

Figure 12. Bilateral retrograde pyelogram of postpartum patient (Figures 10 and 11). Right pyelogram shows stones and pyelonephritis. Normal left pyelogram.

The etiological factors should be given careful attention, and all measures to prevent recurrent lithiasis should be taken. We should endeavor to eradicate infection and eliminate the factor of stasis. Focal infections should be cleared up, and a proper dietary regimen instituted. Patients should be x-rayed every three to six months over a period of several years, and they should have excretory urograms taken occasionally.

It would seem to be the opinion from recent publications that marked progress has been made in the management of patients with renal calculi; however, the sober fact remains that calculus disease is still a major problem in urology.

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A Procedure for Repeated Infant Transfusion

Frances A. Allen, M.D., and Alfred G. Dietrich, M.D.*

Newton, Kansas

In a small general hospital where interns and residents are not available, the time consumption incident to infant and small-child blood transfusion, obtaining blood specimens for laboratory procedures, and intravenous fluid administration is often a very demanding item upon the time and patience of a busy doctor. Also, for the doctor who is inexperienced in pediatric procedures and with a shortage of nursing personnel, an infant transfusion may become a procedure to be dreaded. It is to be expected that as a result of these factors the recovery of a very ill child may be retarded, due to the hope on the part of the doctor that he can "get by" without transfusions. The use of hyaluronidase has of course helped solve the fluid administration problem by enabling the rapid administration of fluids subcutaneously.

In our hands the installation of an indwelling catheter into the saphenous vein has been a safe and effective procedure for facilitating blood transfusion. This has been used for ordinary transfusions, for repeated transfusions, and also for exchange transfusions for erythroblastotic infants. In the latter cases it is especially advantageous where the possibility of re-exchange of blood and supplementary administration of blood is contemplated.

The procedure as outlined below has the advantage that the catheter remains in place as long as needed. (In one case it was still patent and usable when finally removed at the end of 25 days.) The fact that the catheter is of relatively inert material and its end lies within the lumen of a large vessel without occluding it, where it is surrounded by actively flowing blood, undoubtedly decreases the likelihood of thrombosis of the vein and occlusion of the catheter. Blood and fluid may be administered through it, and blood samples for laboratory tests may be withdrawn from it, although at times the latter is difficult due to impingement of the wall of the vein upon the end of the catheter.

At this writing it has been used in seven cases in the Bethel Deaconess Hospital with no complication and with much relief from technical difficulties on the part of the attending physician and the nursing personnel. Three of these cases were erythroblastotic infants where exchange transfusion was done with survival of the infants. One infant received two 500 cc. exchanges.

The procedure as performed by the surgeon is as follows: The infant is strapped to a circumcision board and is quieted by a nipple dipped in simple elixir. The femoral region of one thigh is washed with surgical soap and water and swabbed with tincture of zephiran solution. The patient is draped with sterile towels. The femoral artery is located by palpation inferior to the inguinal ligament. Just medial to this, and extending below the inguinal fold, a linear area 2 cm. in length is infiltrated with one half per cent procaine with 2 minims epinephrine per ounce.

An incision is made and the adipose tissue and superficial fascia are divided, exposing the long

* From the pediatric and surgical services of the Bethel Clinic, Newton, Kansas.

saphenous vein. The vein is freed to the saphenofemoral bulb, and any tributaries which interfere with its freeing are clamped and ligated with 4-0 chromic catgut. The vein is then elevated by a piece of 4-0 chromic catgut slipped around it. This ligature is tied approximately 1 cm. from the saphenofemoral junction, and the vein is clamped proximal to this. The vein is then severed between the clamp and tie and, by gently rotating the clamp so as to put some stretch on the vein, a small transverse incision through one-half the wall is made by a knife. The incision should be approximately 5 to 8 mm. from the saphenofemoral junction, depending upon the size of the vein. A number 16 gauge plastic tubing 12 inches long with tip bevelled is inserted into the saphenous vein and advanced up the femoral and iliac veins for a distance of 6 cm. into the lower vena cava. The tube is tied in place by two sutures of 4-0 chromic catgut, the distal one being looped around the tube twice and then tied for a second time. A number 18 gauge needle with a plug is inserted into the tube at its end to prevent the escape of blood, after the catheter has been irrigated with normal saline to test its patency. The wound is irrigated with normal saline solution.

The fascia is closed with interrupted sutures of 4-0 chromic catgut. The skin edges then are approximated by interrupted vertical mattress sutures of the same material, except that the one at the lower end of the wound where the tube is brought out is of 5-0 cotton and is also looped around the tube twice and tied a second time to anchor the loop securely to the skin. Thus there is a double precaution that the tube will not be pulled out until the desired time. A dressing using collodion only may be practical, or one using waterproof adhesive does very well. The tube is now ready for use.

If only a transfusion is desired, the infant is returned to his room and is given the desired amount of whole blood by the usual drip method. After use, the catheter is filled with normal saline and the plug inserted into the hub of the needle. The precaution must be taken that blood does not run too fast as it might through an 18 gauge needle.

If an exchange transfusion is desired, it is carried out by the following procedure: A three-way valve is attached to the needle lying in the catheter, the side arm being attached to the source of blood, and a 20 cc. syringe is attached to the direct arm of the three-way. Higher up in the tubing, coming from the blood flask, a second three-way valve is attached with a 20 cc. syringe on the side arm. Blood is then drawn into the upper syringe in 10 cc. quantities and injected into the infant through the lower three-way and into the catheter. After each 10 cc. of blood is injected, a like amount is withdrawn into the lower syringe and discarded into a splash basin. This con-

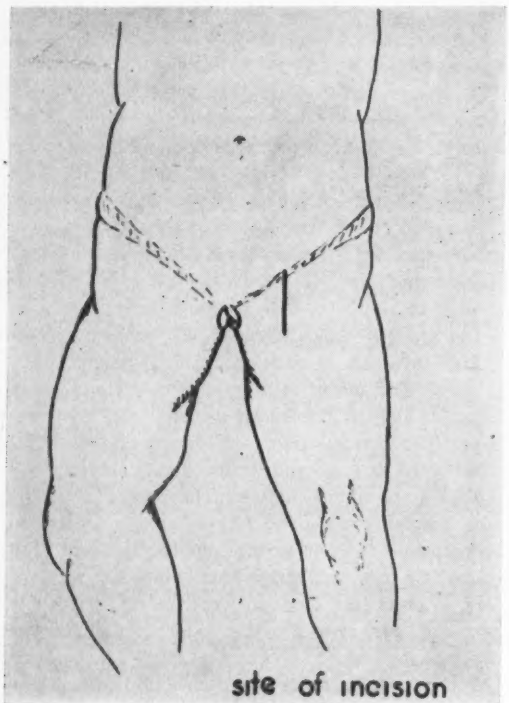

Figure 1. Site of incision.

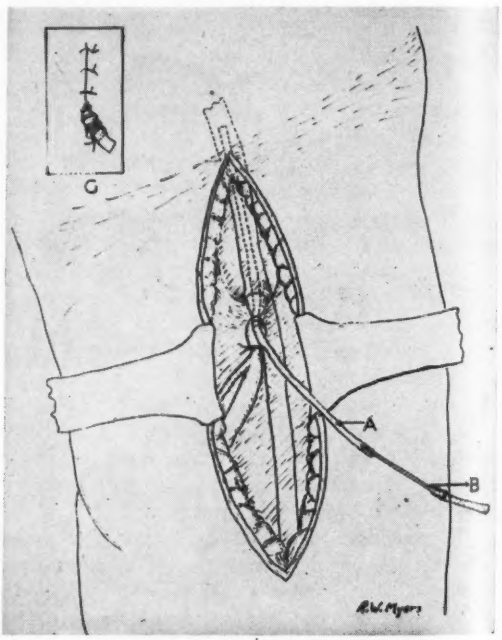

Figure 2. A, plastic tube. B, number 18 gauge needle attached to transfusion set or plugged when not in use; C, insert, skin closure showing method of stabilizing tubing.

tinues with alternate injection and withdrawal in 10 cc. amounts until the desired exchange is accomplished (usually 500 cc.). After each 100 cc. of blood is injected, 1 cc. to 2 cc. of calcium gluconate is injected directly into the three-way attached to the catheter. A separate syringe containing the calcium gluconate is kept at hand for this purpose. This is to replace the calcium removed by the anticoagulant employed in the blood used for transfusion. Without it, hypocalcemic tetany may result. The withdrawing syringe is prone to become stiff and sticky unless rinsed frequently in normal saline. A splash basin containing sterile normal saline should be immediately available for this purpose. After completion of the exchange, the indwelling catheter is irrigated and left filled with normal saline and the needle plug inserted. (See diagram for details.)

If subsequent re-exchange is necessary, it is carried out in exactly the same manner. Additional amounts of supplementary Type O, Rh negative blood may be administered through the indwelling catheter as needed. It is suggested that if the catheter is not being used for fluid administration daily, it will aid in maintaining its patency to irrigate it at least twice daily with normal saline. Blood specimens for laboratory tests may be obtained through the indwelling catheter after first aspirating the normal saline which lies within its lumen.

It has been our practice to keep a sterile infant exchange transfusion set-up available at all times with tubing, three-way valves, syringes, etc., all ready for use. The tubing connecting the three-ways and extending to the blood supply is tied securely to the three-ways, so that the usual confusion of assembly of a complicated apparatus is avoided. It is then only a matter of attaching syringes, filling the tubing with blood, attaching to the hub of the needle lying in the catheter, and starting the procedure.

When the tubing is no longer required, it may be removed by merely removing the skin sutures holding the catheter and exerting a steady pull on the catheter. It slips out of place easily. The other sutures, if they are still in, are removed at this time. Usually they have been removed on approximately

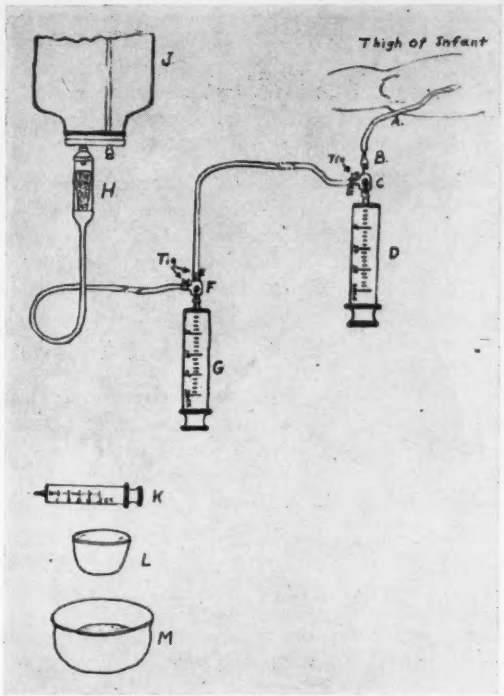

Figure 3. Transfusion apparatus. A, catheter in saphenous vein; B, number 18 gauge needle in catheter; C, three-way valve; D, 20 cc. blood withdrawing syringe; E, side arm attached to tubing from blood source; F, three-way valve; G, 20 cc. syringe for blood injection; H, filter and drip attached to blood flask; J, blood flask; K, 5 cc. syringe containing calcium gluconate; L, sterile saline basin for rinsing syringe; M, basin for aspirated blood discard.

the sixth or seventh day after the insertion of the tube. A pressure dressing is applied to the femoral region and held in place with waterproof tape. All wounds have healed without complications.

It is our belief that the initial 20 or 30 minutes incident to the installation of an indwelling catheter saves much time for the doctor in the long run and makes him less hesitant to go to the "bother" of transfusing an infant repeatedly.

Note: The plastic tubing used is BD plastic tubing No. 444T, 12 inches, which is a special vinyl compound prepared by Becton, Dickinson and Company.

"To carry the healing art to the highest perfection of which it is susceptible, more skill, more learning, more industry, and indeed, more integrity, are requisite in the members of the medical faculty, than in those of any other profession.

". . . The mercenary practitioner, who is destitute of zeal in the cause of humanity, who has no love for his profession, who feels no ardour in the pursuit of studies and observations, which leads to its improvement, but pursues an indolent routeine, and for the emolument only, makes a trade of his practice, must have first extinguished every principle of humanity, or honour, and of moral responsibility."

—Thomas Miner (1823)

Pituitrin Induced Shock—A Case Report

M. Dale Atwood, M.D.,* and Hansel Benvenuti, M.D.*

Wichita, Kansas

There is little question that a form of shock may be produced, in particularly sensitive or sensitized individuals, by the injection of a solution of posterior pituitary extract.[1] The role of parenterally administered pituitary preparations in producing collapse or sudden death has been well established, and numerous such instances have been recorded.[2]

According to pharmacologists and anesthesiologists, so-called "pituitrin shock" is a phenomenon produced by the pressor substances present in the extract used. This pressor action is specific in its action on the coronary arteries, producing vasoconstriction and subsequently shock. Pendleton, Ball and Rhode subscribe to this theory, as do Adelman and Lennon, stating the specific action of the pressor substances on the coronary arteries results in "myocardial anoxia, cardiac dilatation, and decreased cardiac output." Simon and Ryder, on the other hand, hold that the entire process of reaction to posterior pituitary extract is a foreign protein reaction due to the presence of the protein in the extract.[1]

Krettek and Russum reported a fatal case of "pituitrin shock" occurring during the medical induction of labor with the purified oxytocic fraction of the posterior pituitary gland. They point out that this case supports the contention that untoward cardiac effects can be avoided only with non-biologic oxytocics.[2]

CASE REPORT

The patient was a 47-year-old housewife, para 18, gravida 19, who was admitted at term in active labor. All of the pregnancies were full term, normal deliveries with the exception of one eight-months baby. Fifteen of the children were still living. She had had no serious illnesses or operations. She had had one previous delivery at this hospital and had been given pituitary extract following delivery with no complications. The family history was not significant other than that the mother died of cancer and the oldest child has diabetes.

The patient had had three recent admissions for false labor, and no significant abnormalities were noted, other than a blood pressure of 150/90 on one admission. She was given no medication prior to delivery, and during delivery nitrous oxide was used for analgesia. The first stage was estimated at 3 hours and 15 minutes; second stage, 7 minutes; and third stage, 7 minutes. She delivered a 7 pound 11½ ounce female in good condition at 1:22 p.m. After delivery of the placenta, she was given 1 cc. of ergotrate and 1 cc. of obstetrical pituitrin intramuscularly. She was returned to her room and given morphine gr. 1/6 at 1:40 p.m.

Shortly after returning to her room, she was observed to be a beefy red color. She was somewhat cyanotic and complained of substernal oppression. No sweating was present. The pulse rate was about 60 beats per minute and regular. No blood pressure was obtainable, and she appeared to be slowly losing consciousness.

Oxygen was started immediately, and she was placed on shock blocks. She was given 50 mg. of ephedrine intravenously, and the blood pressure improved. One ampule of coramine was also given intravenously, and a little later 6 minums of epinephrine was given. The epinephrine caused considerable improvement as noted by the diminution of the red flush. At 2:00 p.m. still no blood pressure was obtainable, but by 2:25 p.m. the pressure was 100/80. In addition to the above therapy, the patient was also given ACTH, 25 mgm I.M., and one pint of blood.

The next day, when questioned, she reported that before leaving the delivery room she noticed itching of her upper extremities and chest. On the way to her room she noticed a lump in her throat which seemed to cut off her breath. She felt weak even before she was taken off the delivery table, and this continued to get worse.

Her hands started swelling with the reaction and were still moderately swollen on the first postpartum day. By the second postpartum day, most of the swelling was gone from the hands. The patient had an uneventful postpartum period with the exception of the reaction to the pituitrin, and she was dismissed on the sixth postpartum day.

SUMMARY

We have reported a case of shock following the use of obstetrical pituitrin after delivery. The patient responded well to therapy. We feel that this case strengthens the argument against the use of ordinary solutions of posterior pituitary extracts.

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* Sedgwick County Hospital, Wichita, Kansas.

BLUE SHIELD

Optional New Benefits

The principal objective of Blue Cross-Blue Shield has been to make available a hospital-medical-surgical plan designed to help most when the serious or unexpected occurs. To this end the regular contracts already provide, for example, as much as 90 days per admission in the hospital, no limit on specialized hospital services listed in the agreement such as drugs, oxygen, etc., and payment for surgical services at about three-fourths of the prevailing charges for such services on a state-wide basis. To the low income member these surgical payments represent full coverage for services given by a participating physician in the plan.

Even with these provisions, which are more and more helpful as the severity of the cases increases, certain necessary restrictions still exist which cause the patient to assume a portion of the cost in particularly long, difficult cases.

To provide greatly extended protection in these areas, an optional rider is being offered to all members of Blue Cross and Blue Shield. Nine diseases are included in this rider. They are: poliomyelitis, leukemia, diphtheria, scarlet fever, tetanus (treatment only), cerebrospinal meningitis (meningococcus), encephalitis lethargica (sleeping sickness), tularemia, and rabies (prophylaxis).

Poliomyelitis is probably the most dangerous and expensive of the nine diseases covered, and it is believed that experience gained in this area will assist in eventually finding the best approach to the entire field of catastrophic illness.

The extended benefit riders are intended to give full hospital, medical and surgical services to Blue Cross-Blue Shield members who elect to take the riders and who require treatment for any of the above diseases. The riders further provide any services available from hospitals or doctors of medicine which are appropriate to the treatment of said diseases. This extra coverage is over and above and in addition to the services available in the present membership agreement.

Since there will be no established fee schedule in the rider, it is intended that Blue Shield should pay the full charges of physicians in excess of the allowances in the regular Blue Shield agreement. These charges would be those ordinarily made to private patients in the community for the services performed.

Extra benefits will be provided up to a limit of $5,000 for each plan or a total of $10,000 for both plans. The cost of the riders will be 30 cents for a single membership and 60 cents for a family membership, per month.

Any member of both Blue Cross and Blue Shield will be eligible to add the extended benefits rider during the opening dates of June 1 for direct pay members and July 1 for members of employee groups. Group members may add the service at the annual re-opening date of their group and, if the response is adequate, the rider may be offered to direct pay members at some future time during the year. If a direct pay member now has only Blue Cross, he will be permitted to join Blue Shield at this same special enrollment opportunity.

Only two restrictions will be applied: (1) The illness must be diagnosed as one of the named diseases and must have been contracted after the first 15 days immediately following the effective date of the riders; (2) claim for services must be made within 12 months from the date the disease is contracted.

Full information will be sent to all participating physicians so that they will be prepared to answer inquiries about the riders. The trustees and staff look forward to the usual co-operation and assistance from all members of the Kansas Medical Society.

THE KANSAS PRESS LOOKS AT MEDICINE

If the federal government really wants to improve the health of the people, here is a suggestion: instead of adding taxes for some fancy socialized medicine scheme, take taxes away from present voluntary health insurance plans and medical expenses.

In other words, permit a person to deduct as an "expense" for income tax purposes his total cost of medical and dental expenses and premiums on hospital and surgical insurance plans.

The present provision is meaningless to 99 out of 100 taxpayers. It permits deductions only of medical expenses in excess of 5 per cent of annual income, and then only if all deductions are itemized.

If, on the other hand, such expenses could be deducted from scratch, the tax incentive to join prepaid health plans and "see your doctor when you ought to" would be tremendous. It would cut from a fifth to a third off medical and insurance costs for all who pay any income tax whatever—and that's almost everybody these days.

It would cost the government some revenue, but so would any other income tax cut. They say that cuts are in prospect. How about this one for a starter?—*Iola Register, April 6, 1953.*

PRESIDENT'S PAGE

DEAR DOCTOR:

This is the first issue of the JOURNAL going to press after the very fine annual session in Wichita. The Sedgwick County Medical Society spared no time or pains as hosts to give us an outstanding meeting. I am sorry that every member of our Society and every member of the Auxiliary could not have been present.

Your House of Delegates authorized a further investigation of the field of indigent care with the Board of Social Welfare to determine the type of contract that might be negotiated. If they will contract only with our Society, including both drugs and hospitalization, then it will be necessary for your officers to determine what can be negotiated with the hospital and pharmaceutical associations.

Remember, nothing in these preliminary investigations is binding as far as the Society is concerned. Your officers do not have the authority to make such a contract. But when all possible information is obtained, we will present it to you, both individually and whenever possible collectively, for your consideration and finally your sanction or disapproval. This will be accomplished by a special called meeting of the House of Delegates.

It is not our desire to attempt in any way to influence your line of thought or your ultimate decision. However, we would like to stimulate in each of you certain trends of thinking. It is up to you to bring those trends to their final conclusion.

Remember, please, it is our obligation to administer to the medical needs of each and every person, regardless of his ability to pay, if and providing they request such service. The fact that an individual may be unfortunate enough to have to request our services through the indigent set-up does not negate our responsibility. The indigent patient of today may be a private patient tomorrow, and, if a satisfied patient today, may be not only a fine patient tomorrow but, what is still more important, he or she may pay for your services over and over again through good will and personal reference of other patients.

Let us not shut our eyes to our responsibility.

EDITORIAL COMMENT

Living Standards

There is probably no member of the Kansas Medical Society who would voluntarily exchange his life in the United States, with all of its difficulties, for that of any other nation on earth. Each individual could list, if required to do so, an impressive series of advantages found here that are not available elsewhere. These lists would vary according to individual tastes and according to individual values, but the end result is not in question.

One difference that might become of interest lies in the field of economy. A recently published table provides an interesting comparison of the cost of common items in five nations. Balancing foreign exchange values would be a difficult task, so this report simplifies the problem by merely estimating the time of labor required in each country before enough is earned to purchase certain goods. It becomes a graphic account of living standards and adds one more, among the many reasons Americans have for being proud of their country.

Included in this report are the United States, Russia, England, France, and Italy. Occupations considered are the auto mechanic, telephone operator, store clerk, bus driver, and carpenter. Items for purchase include butter, bread, bacon, coffee, movie ticket, monthly electric bill, refrigerator, radio, nylon hose, man's suit, and a light automobile. Foreign data was obtained from correspondents stationed in the country involved. They did not attempt to compare currency but studied only the relation of wages and prices within each nation. Therefore, these figures present the time of work required to purchase certain commodities.

For example, the United States auto mechanic may buy a pound of butter after 22 minutes work. In Russia he works 7 hours 15 minutes for a pound of butter. The auto mechanic in England will work 48 minutes, in France 1 hour 48 minutes, and in Italy 3 hours 20 minutes for the same thing.

The telephone operator works 30 minutes in the United States—14 hours 30 minutes in Russia, 48 minutes in England, 2 hours 36 minutes in France, and 3 hours 36 minutes in Italy for a pound of butter. The carpenter buys a pound of butter in the United States after 15 minutes work. He works 10 hours 53 minutes for his pound of butter in Russia, 48 minutes in England, 2 hours 30 minutes in France, and 3 hours 20 minutes for the same commodity in Italy.

Under the heading for monthly electric bills Russia lists that there are none for workers, and under refrigerators there are also none for workers. In general, England is nearest the United States. Among the items selected it is never ahead of this country and rarely equal. Russia is usually farthest away and Italy next. The principal exception is, interestingly, the item of light automobiles. Here Russia is next to the United States under the earnings of the auto mechanic and the carpenter but a little behind England for the other occupations.

Even for the purchase of cars Russia is far behind the United States. The American auto mechanic may buy his car with 6 months labor. The Russian needs 15 months work while in England he must work 2 years. The carpenter fares a little better in this country (16 weeks 4 days) but worse in Russia (22 months 2 weeks) and even at that is still slightly better off than the English carpenter who works 2 years. The telephone operator and the store clerk work longer in all countries, but here English workers come ahead of the Russian. In this category Italy is far behind.

A very wide span exists in the relative cost of coffee and of bacon. The telephone operator in America earns a pound of coffee with 32 minutes work. In Russia it is 35 hours 12 minutes. Again, England is closest, but this telephone operator works 1 hour 36 minutes. In France she works 2 hours 18 minutes and in Italy 6 hours 10 minutes for a pound of coffee.

Bacon has a similar range. The bus driver earns a pound of bacon in the United States after 18 minutes, while in Russia he works 20 hours 48 minutes, in England 1 hour 3 minutes, in France 2 hours 12 minutes, and in Italy 2 hours 6 minutes. Nylon hose cost the American telephone operator 40 minutes, but her Russian counterpart works 27 hours 30 minutes for each pair. In England it is 2 hours, 48 minutes, 6 hours 6 minutes in France, and 6 hours 36 minutes in Italy.

A telephone operator in this country can see a movie with her wages from 30 minutes of work, while operators in England and France work twice as long to pay for that form of recreation. Girls from the switchboards of Russia and Italy must work 2 hours to buy a movie ticket.

The operator in this country works 40 minutes for a pair of nylon hose. At the other extreme, the Russian telephone operator must work 27 hours 30 minutes for a similar pair of hose.

The above are just samples, but the results are similar in all categories. So even if further reasons for selecting the American way of life are not needed, the information here printed gives one additional proof to the existing mountain of evidence that the American way is the finest standard of living in the world.

MRS. LEO J. SCHAEFER, SALINA, KANSAS

President, Woman's Auxiliary to the American Medical Association

1953-1954

The Kansas Medical Society Expresses Its Pride in Mrs. Leo J. Schaefer, Salina, Kansas

President of the Woman's Auxiliary to the American Medical Association

The medical profession in this state can take pride throughout the coming year in the position of a member of the Woman's Auxiliary to the Kansas Medical Society. At a meeting held in New York City early this month, Mrs. Leo J. Schaefer, Salina, took office as president of the Woman's Auxiliary to the American Medical Association. She is the first Kansan to have won a national office in the Auxiliary.

The position carries with it numerous responsibilities as well as honor. Mrs. Schaefer will be charged with the duty of carrying on present projects such as nurse recruitment, promotion of *Today's Health,* the AMA publication for lay distribution, and public relations, and in addition will be required to inaugurate new activities.

Mrs. Schaefer is an efficient, capable worker and through the years has acquired an intimate knowledge of Auxiliary projects. She began this work as a member of the Auxiliary in Saline County, which she served as president in 1940-1941. She was also interested in the state organization and at various times was councilor, revisions chairman, and public relations chairman. She reached the highest office in the Kansas Auxiliary in 1944-1945 when she served as president.

Her scope was widened to include the national organization when she started her first term as a member of the board of directors. That was followed by one year as program chairman, two years as second vice-president, and two years as first vice-president. During the past year she has served as president-elect, in which position she has been an active aid to the president.

Mrs. Schaefer's first interest is her family. This includes Dr. Schaefer, who is a surgeon, one daughter, and four sons. It might be surmised that Auxiliary work receives second priority. Then follow other interests, church work, the Parent-Teacher Association, the General Federation of Women's Clubs, and civic, music, and other community activities. She has also directed the Red Cross nutrition program in Saline County for many years, a position for which she was well trained since her degree was in home economics and she formerly was employed as a dietitian.

The congratulations and best wishes of all members of the Kansas Medical Society go with Mrs. Schaefer as she assumes the highest Auxiliary office in the nation.

94th Annual Session, Kansas Medical Society

The 94th annual session of the Kansas Medical Society was held in Wichita, Kansas, May 3 through May 7, 1953. The host society was celebrating its 50th anniversary in connection with the meeting and, through its Arrangements Committee under the chairmanship of Dr. E. S. Brinton, had made elaborate arrangements for this annual session. The weather was generally favorable, and, according to the opinion of those who were present, the session was outstanding in all respects.

The total attendance for the golf tournament and the skeet shoot was slightly reduced from the figure of several years ago but was considered quite good in view of the conflict between these athletic events and the annual meeting of the Kansas Academy of General Practice. This latter meeting was well attended and favorably reported by those who were present.

Also in conjunction with the annual session were successful meetings of the Woman's Auxiliary to the Kansas Medical Society and the Kansas Medical Assistants' Society. As in the past, many other groups met for brief periods in connection with this meeting, and all reported good attendance and spirited discussions. To mention only a few, there were meetings of the Kansas Blue Shield Board of Directors, the Advisory Committee to the Vocational Rehabilitation Service, and other specialty groups in medicine such as obstetrics, pathology, pediatrics, etc.

The scientific program began Tuesday morning, May 5, and continued until noon on Thursday. All announced speakers appeared on schedule, and many favorable comments were received regarding the exceptionally high caliber of the scientific program at this session. It was noticed that these lectures were unusually well attended.

There was an average number of scientific exhibits, unusual this year because of their quality and because the majority were produced by members of the Kansas Medical Society. These exhibits were judged by a committee of guest speakers, and the following awards were made: first prize, "Radioactive Isotopes," Doctors Charles M. White, Thomas J. Luellen, James R. Stark, Robert P. Norris, and Philip W. Russell, Wichita; second prize, "The Influence of Chemotherapy and Antibiotics on Surgical Management of Hydronephrosis," Dr. Harold F. O'Donnell and Dr. William H. Browning, Wichita; third prize, "The Treatment of Fractures of the Shaft of the Femur in Young Children," Doctors Charles R. Rombold, Harry O. Anderson, Henry O. Marsh, John F. Lance, Jr., William R. Miller, and Cline D. Hensley, Wichita.

The largest number of commercial exhibits ever to appear at an annual session of the Kansas Medical Society was presented this year. Seventy-three booths were constructed in a labyrinth at the Rose Room at the Forum, which number is at least six greater than the highest previous total. Throughout the session members stopped and visited with the exhibitors, and this portion of the meeting was favorably received, according to expressions obtained from representatives both of the membership and of the companies which exhibited. In addition to the companies reported in the program issue of the JOURNAL, the following firms were present: A. S. Aloe Company, Dictation Systems Company, Continental Casualty Company, Encyclopedia Americana, and U. S. Vitamin Corporation.

The highlight among entertainment features was the annual banquet held at the beautiful new ballroom of the Broadview Hotel. A total of 522 physicians and their wives were present to witness the oath of office administered to the president-elect, Dr. Lucien R. Pyle, and the presentation of the president's key to Dr. Warren F. Bernstorf upon the completion of his term. A special presentation was made to state Senator R. C. Woodward of El Dorado for outstanding services rendered the people of Kansas through his efforts to maintain high standards of health care. A thoroughly enjoyable entertainment period was offered by the Wichita Kiwanis Male Chorus, after which the remainder of the evening was spent in dancing.

REGISTRATION

Registration for the meeting was good. Six hundred forty-eight members of the Kansas Medical Society attended this session. Three hundred twenty-seven guests, of whom 39 were non-member physicians, registered. There were 271 registered by the Woman's Auxiliary to the Kansas Medical Society and 310 by the Kansas Medical Assistants' Society, making a total registration for the 94th annual session of 1,556.

FIRST SESSION, HOUSE OF DELEGATES

The House of Delegates met twice during the annual meeting and conducted an unusual amount of business. The first meeting was a dinner on Tuesday, May 5, at the Allis Hotel, at which time committee reports and reports of officers were heard. These have either been previously published or are

available at the Executive Office and will not be recorded again in this report. Considerable time was consumed in exploring topics such as malpractice insurance, indigent health care, the University of Kansas School of Medicine, a public relations program for the Society, and a review of health legislation. Each of these was presented by various committees as a supplementary report to those previously printed in the JOURNAL.

Officers generally gave oral reports which are published elsewhere in this issue. The principal exception was the report of the secretary, who advised that the Kansas Medical Society has a paid membership of 1,289. There were, at the time of the meeting, 246 delinquent members, 139 honorary members, 42 on leave of absence, and 51 in service. This makes a total membership of 1,767, a reduction of one during the past year.

Under the item of new business, many resolutions were introduced, and those which were favorably acted upon are recorded in the minutes of the second meeting of the House of Delegates.

SECOND SESSION, HOUSE OF DELEGATES

The House of Delegates held its second session at the Allis Hotel, Wichita, beginning with a luncheon at noon on Thursday, May 7. On this occasion resolutions previously introduced were acted upon. All had been studied by a special Reference Committee composed of Dr. Dale D. Vermillion, chairman; Dr. H. Penfield Jones, Dr. John L. Lattimore, and Dr. Lucien R. Pyle.

The first resolution to be considered was recommended for passage by the Reference Committee and was unanimously approved by the House of Delegates. It provided "That the House of Delegates go on record commending the Blue Shield Relations Committee and the official bodies of the Blue Cross-Blue Shield for offering this progressive step in voluntary health insurance for the people of Kansas and that a copy of this action be sent to the director of Kansas Blue Cross-Blue Shield and to the chairman of the above named committee."

The Reference Committee recommended adoption of all proposed amendments to the By-Laws of the Kansas Medical Society. Each was considered individually, and all were approved by the House of Delegates. The amendments follow:

Resolved, That Chapter XI, Section 1a of the By-Laws on Pages 23 and 24 be amended by adding to the list of standing committees

"Past Presidents Advisory Committee, Sec. 35."

Resolved, That Chapter XI on Page 33 be amended by the addition of a new section, No. 35, to read as follows:

"35. The Past Presidents Advisory Committee shall be composed of *all living* Past Presidents. Meetings shall be held at a convenient time and place at the call of the Immediate Past President, and succeeding meetings as desired. The Chairman and Secretary are to be selected at the first meeting of each year.

"The purpose of the committee shall be mutual fellowship and means of free discussion of all pertinent matters affecting the ideals, aims, proficiency, and successful operation and work of the Kansas Medical Society. The advice and recommendations arising from these meetings and discussion, which have the benefit of experience in office, shall be communicated to the Council through the Immediate

SERVICE SEPARATIONS

As a service to physicians and communities in this state desiring additional medical personnel, the Journal of the Kansas Medical Society will publish in this column each month the names of medical officers who will shortly be separated from the armed forces. These are men who volunteered from Kansas, and many of them will probably be interested in finding locations in this state. Anyone interested in contacting these physicians may write to the address here given.

Claude D. Baker, M.D.
4172 Menlo Drive
Wichita, Kansas

William W. Benefiel, M.D.
P. O. Box 105
Medicine Lodge, Kansas

Ralph S. Crawshaw, M.D.
2113 Potomac Drive
Topeka, Kansas

Karl A. Erhlich, M.D.
226½ West Central
El Dorado, Kansas

Donald R. Germann, M.D.
4603 Melvin Street
Kansas City, Kansas

Dan Wesley Hoebert, M.D.
227 Poplar
Halstead, Kansas

Erwin M. Janzen, M.D.
120 Southwest 2nd Street
Newton, Kansas

Maurice H. Jennison, M.D.
4136 Adams
Kansas City, Kansas

Glenn A. Lessenden, M.D.
1309 Ohio Street
Lawrence, Kansas

Charles W. Merten, M.D.
630 Santa Fe
Augusta, Kansas

S. B. Whittenberger, M.D.
6029 Delmar
Mission, Kansas

Past President who is their official representative upon that Council."

Resolved, That Chapter VI, Election of Officers, Section 1 on Page 13 shall be amended and become effective on and after its adoption by the House of Delegates, by striking from the last two lines the clause "a list of two or more candidates for each elective office." In lieu thereof the following shall be inserted:

". . . a list of candidates for each elective office, consisting of one or more candidates for the offices of President-Elect, First Vice-President, Secretary, Treasurer, and Delegate-Elect to the American Medical Association, and TWO or MORE candidates for the offices of Second Vice-President and Alternate Delegate to the American Medical Association. Whenever possible or practical, the candidates for Treasurer should be named from residents of the city or vicinity of the location of the central office."

Resolved, That Chapter VIII, Section 13 of the By-Laws on Page 19 shall be amended by removing Barber County from the Eleventh District and placing it in the Sixth District.

Resolved, That Chapter XII, Section 5, be amended as follows: In Line 10 after the word "practice" a comma shall be inserted to be followed by the clause "and the greater proportion of his professional work be conducted within this state." The remainder of the section is to be retained.

Resolved, That Chapter XII, Section 9, be amended to read as follows:

"Section 9. A physician living on or near a county line WITHIN this state, and practicing in adjacent counties, may hold membership in the county of the major proportion of his professional work, or in the county most convenient for him to attend if permission is obtained from the component society in whose jurisdiction he resides and by election to the component society in which he desires membership."

Resolved, That Chapter XII, Section 10, be amended to read as follows:

"Section 10. On and after the passage of this amendment, no physician shall be admitted to new membership in this Society, or in any of its component societies, who is a member of a state or component medical society of another state unless he intends by his application to transfer membership and the major portion of his professional work to this state. Any physician residing in a county adjacent to another state or in a county of an adjoining state, licensed to practice in both states, and carrying on his professional work in both states, but the greater part of his professional work is carried on in this state, shall be eligible for membership in The Kansas Medical Society. A full time teaching assignment at the University of Kansas School of Medicine or in any state supported school, college or institution shall be considered the major portion of his professional work, regardless of the proportion of financial remuneration received from professional work outside the state of Kansas. When there are unusual circumstances connected with the above limits of eligibility which cause his membership to be advisable in this state or the adjoining state, consent to membership must be obtained from the county or state society of his residence."

Resolved, That Chapter XI, Section 1 (a) be amended by changing the name of the "Committee on Public Health and Education" to the "Committee on Public Relations, Sec. 29."

Resolved, That Chapter XI, Section 29 be amended to read:

"The Committee on Public Relations shall consist of five or more members who shall, through the media of speakers' bureaus, newspapers, radio, and personal and group meetings, make material and information available to the public on all subjects for betterment of general health, and secure for the profession criticisms and valuable information for the improvement of relations of physicians individually and collectively with patients and the public generally. At least the chairman and one other member of this committee shall have served on the retiring committee."

Resolved, That Chapter XI, Section 1 be amended by the addition of the "Committee on Pathology, Sec. 36."

Resolved, That Chapter XI, Section 36 shall read:

"The Committee on Pathology shall be composed of five pathologists, appointed for a term of three years. Originally, one shall be appointed for one year, two for two years, and two for three years. All matters presented to the Society relating to the practice of pathology shall be referred to this committee for study and recommendation."

Two proposed amendments to the Constitution could not be acted upon by the House of Delegates at the 1953 meeting because they had not been previously published for the consideration of the delegates. These provided that the chairman of the Editorial Board be made a member of the Council, and a resolution offered a means of doing so without changing the numerical strength of the Council, by abolishing the office of second vice-president. The Reference Committee recommended, and the House of Delegates concurred, that these amendments be referred to the Committee on Constitution and Rules for study and presentation at the 1954 meeting of the Society.

A resolution providing for a review of the boun-

daries of the 12 councilor districts of the Society was approved, upon recommendation of the Reference Committee. Under this resolution, the executive secretary will review the physician population of each district, secure the views of each component society, and present this information to the Council for possible action at the time of the 1954 session.

The Reference Committee recommended for passage a resolution providing that the Kansas State Obstetrical Society co-operate with the Committee on Maternal Welfare of the Kansas Medical Society in an investigation of maternal and neonatal deaths throughout the state. The House of Delegates approved the resolution.

A resolution on mental health was reported by the Reference Committee as being one which should serve as a stimulus and a partial outline for the Committee on Mental Health and the Committee on Medical Economics. The House voted to follow the recommendation of the committee, that copies of the resolution be given the chairmen of the two committees for study and that reports of their studies be given at the 1954 session of the Society.

A resolution acknowledging the obligation of members of the Kansas Medical Society to co-operate with school personnel, parents of exceptional children, and epileptic patients, to permit such patients to attend regular classes in school, was referred to the Committee on Mental Hygiene for study and dissemination of information. This action by the House was in accordance with the recommendation of the Reference Committee.

The next resolution provided for a study of the physician's role in the matter of adoptions, the study to be made by the Committee on Child Welfare, the Committee on Maternal Welfare, and/or the Committee on Mental Hygiene. The Reference Committee recommended passage of the resolution, and the House of Delegates voted its approval.

The Kansas State Osteopathic Association sent a resolution to the Kansas Medical Society which was read and discussed. The House of Delegates established broad principles and then authorized the Council to offer assistance to the osteopathic association in any manner not violating the rules and regulations adopted by the House of Delegates. This portion of the report of the Reference Committee was adopted.

The following report of the Reference Committee regarding the matter of indigent care was approved by the House of Delegates:

"The Reference Committee reviewed the material on indigent health care as discussed during the first meeting of the 1953 House of Delegates and is of the opinion that this House is not ready at this time to act finally upon this important subject.

"We are of the opinion that the House of Delegates should have more detailed information, such as what services will finally be required and what finance will ultimately be involved. Problems affecting more than one health service should not be contracted by any one group, and under this proposal Kansas medicine is required to commit hospitals and pharmacists without their consent.

"However, we believe the Kansas Medical Society should continue to negotiate with the Kansas State Board of Social Welfare, with the Kansas Hospital Association, with the Kansas Pharmaceutical Association, and with any other group or agency necessary to develop a sound health program for the indigent of this state.

"We suggest that the House of Delegates direct the Council to study this problem further and to prepare a plan or plans that will be satisfactory to the Council and which are satisfactory to the other agencies involved.

"We recommend that this material then be prepared and sent to each component medical society in Kansas and to each delegate, for study.

"After adequate opportunity for study by the county societies, we further recommend that the president then call a special meeting of the House of Delegates, to be held on a Sunday, for final action on this subject.

"We recommend the adoption of this report."

Dr. C. H. Benage, president of the Professional Advisory Council, spoke on activities of this organization in attempting to create improved working relations between the various member professions. A motion was then made by Dr. Henry N. Tihen, seconded, and later adopted, to the effect that the "House of Delegates express its desire to continue the mutual association with the various groups on the council and to express again its appreciation for their assistance."

The House of Delegates, in accordance with a recommendation of the Reference Committee, did not adopt two resolutions introduced at the first meeting by the Kansas Academy of General Practice. Instead of adopting the first, the committee suggested that "our delegates to the A.M.A. be instructed to support any progressive advance in these principles of ethics."

The wording of the Reference Committee with regard to the second resolution sponsored by the general practice group was as follows: "The medical profession can only regulate the individual expression of any individual member or representative by reprimanding him, by withdrawing his membership, or, in the case of an employee, by requesting his resignation. These potentials are now possible."

The last item of business was the election of offi-

cers and councilors, as listed below. Two of the councilors, Dr. Floyd C. Taggart and Dr. Cyril V. Black, were re-elected. Two others, Dr. Harold M. Glover and Dr. James L. Jenson, were elected for first terms. Another new councilor, Dr. Charles E. Vestle, was elected to complete two years of the term of Dr. James G. Hughbanks, the vacancy being created by the resignation of Dr. Hughbanks.

Dr. Bernstorf, having completed his term as president of the Kansas Medical Society, relinquished the office and introduced the new president, Dr. Pyle, who promptly adjourned the meeting, and the 94th annual session was concluded.

OFFICERS FOR 1953-1954

President.....Dr. Lucien R. Pyle, Topeka
President-Elect.....Dr. Murray C. Eddy, Hays
First Vice-President.....Dr. John M. Porter, Concordia
Second Vice-President....Dr. Clyde W. Miller, Wichita
Constitutional Secretary..Dr. Dale D. Vermillion, Goodland
Treasurer.....Dr. John L. Lattimore, Topeka
A.M.A. Delegate
1952-1953.....Dr. John M. Porter, Concordia
A.M.A. Delegate
1953-1954.....Dr. Laurence S. Nelson, Salina
A.M.A. Alternate
1953-1954.....Dr. George F. Gsell, Wichita
A.M.A. Delegate
1954-1955.....Dr. George F. Gsell, Wichita
A.M.A. Alternate
1954-1955.....Dr. Lee H. Leger, Kansas City

COUNCILORS FOR 1953-1954

A complete list of councilors, their districts, and the dates on which their terms expire, is printed below:

1. Dr. W. L. Anderson, Atchison, 1954
2. Dr. H. P. Jones, Lawrence, 1954
3. Dr. Charles E. Vestle, Humboldt, 1955
4. Dr. Floyd C. Taggart, Topeka, 1956
5. Dr. Harold M. Glover, Newton, 1956
6. Dr. Clyde W. Miller, Wichita, 1955
7. Dr. S. A. Anderson, Clay Center, 1954
8. Dr. A. E. Rueb, Salina, 1954
9. Dr. James L. Jenson, Colby, 1956
10. Dr. L. W. Reynolds, Hays, 1955
11. Dr. Cyril V. Black, Pratt, 1956
12. Dr. R. G. Klein, Dodge City, 1955

NOMINATING COMMITTEE

Five past presidents of the Kansas Medical Society were elected by the House of Delegates to comprise the Nominating Committee for 1954. Chosen for this committee were the following: Dr. L. S. Nelson, Salina, chairman; Dr. Clarence H. Benage, Pittsburg; Dr. O. W. Davidson, Kansas City; Dr. John L. Lattimore, Topeka, and Dr. Noble E. Melencamp, Dodge City.

EDITORIAL BOARD

At the last meeting of the House of Delegates of the 94th annual session of the Kansas Medical Society, Dr. Orville R. Clark was again named editor of the JOURNAL OF THE KANSAS MEDICAL SOCIETY, and Dr. John W. Cavanaugh was reappointed to a three-year term on the Editorial Board. Current membership of the board, composed entirely of Topeka physicians to facilitate work on the publication, includes, in addition to Dr. Clark and Dr. Cavanaugh, Dr. David E. Gray, Dr. Richard Greer, and Dr. Dwight Lawson.

PRESIDENT'S ADDRESS

The 94th year in the history of the Kansas Medical Society will soon have passed into history. It is fitting to remember that this organization is older in point of origin than the state of Kansas. It is also a matter of considerable pride to review briefly the history of the past 94 years and to realize that in that time no action has ever been taken officially by the Society which was not in the public interest. This is a fact of some significance, a testimony to the leadership of the Society through the years and to the consistency of the decisions made by its governing body, its Council, House of Delegates, and committees. We may all be proud of that record.

With an experience of some 30 years spent in active work in the Kansas Medical Society as a background, plus a very enjoyable and eventful year just about passed as your president, we possibly may be pardoned if we presume to pass on to you some impressions and suggestions which occur to us as a result of that experience, in the hope that it may be for the future good of an already wonderful organization.

The office of president of the Society is a truly great honor and one which is possible for only a limited number of men to attain. Consequently, it is an office of great responsibility and trust. As such, it is a constant challenge to the incumbent, presenting unlimited possibilities for activity and work. In fact, the office is rapidly assuming the proportions of a full time job and might well become so for the good of all concerned. The only saving grace at present is the fine personnel in the Topeka office and the very commendable work of the several standing committees which has been truly outstanding, for which I wish to express my appreciation and sincere thanks.

The program and activities of the Society have been creditably carried on to definite conclusions in spite of the time and energy which were of necessity devoted to the legislative session. The latter is important but always disrupts the Society program to a great extent.

Negotiations have been in progress with the Board of Social Welfare throughout the past year, and we believe we finally have some point of departure for a suitable solution to the problem of care of the indigent in Kansas. Final commitment will undoubtedly be left to the Council and the House of Delegates. Several meetings with the welfare board have served to acquaint everyone with the problems involved and, we believe, have resulted in a better understanding of the situation on the part of everyone concerned.

At the 1952 meeting of the House of Delegates a request was received for an investigation of the University of Kansas School of Medicine. A committee was appointed which went into the situation thoroughly, with the result communicated to you in a report from that committee. I am sure we can have every confidence in that report. The co-operation of the medical school authorities was truly wonderful and deserves favorable comment. The relations with the medical school are on a very high plane and, we believe, have never been more pleasant, with the prospect of continuing for the future.

Activity with regard to the legislature was interesting. Once again we were able, by a narrow margin, to preserve unadulterated the practice of medicine in Kansas. The cultists were again successfully restrained from entering the practice of medicine, for which they are obviously not prepared. This was accomplished only with the very fine co-operation of the membership at the critical time and from the grass roots level. The response of many of the members to this request for help will always be one of the fine remembrances of the year and the profession.

Out of these situations as they have developed, we have, it seems, arrived at a defensible and consistent viewpoint as regards cults, one which is apparently quite salable. Briefly stated, this is: We, as ethical members of a profession whose chief interest is the health and welfare of the people of Kansas, being unalterably committed to that interest as the natural guardians of the health and welfare of the people of Kansas, can have no logical basis for criticism of the cults with regard to their attempts to enter the practice of medicine, except their very evident lack of preparation for the same. Until such time as the cults show definite and satisfactory evidence of such preparation, we have no other course in keeping with our responsibility than to exert every effort to deny such privileges to them with the conviction that such action is in the public interest.

The matter of public relations has of late been receiving the attention it must have if we are to reclaim the confidence and respect of the American public. Our own committee, with a very able chairman, has done a fine job in this field. I am sure you will have received his report with much interest. We have made a creditable start in reclaiming our place in the sun as far as the admiration and respect of the general public are concerned. Much more conscientious work needs to be done.

The situation can be improved with a proper program of education of the public with regard to problems of common interest, if the medical profession is willing to take the public into its confidence and make a bona fide effort to co-operate in removing mutual misunderstandings. The program of public relations needs to be extended and amplified with the above in mind. The public is tired of getting medical information from popular magazines and rightfully expects the medical profession to provide it for them.

The Committee on Control of Cancer again sponsored the Mid-West Cancer Conference in Wichita, with a fine program highlighted with a galaxy of experts in that field. Interest and attendance showed an appreciable increase. This is one of the finest activities of the Society, and it should be given even greater encouragement.

The Auxiliary has had a fine and profitable year. Much interest is being shown in the Auxiliary program, and the group is showing a fine increase in membership. There are some areas, however, where more support is needed from the profession to the extent that the Auxiliary may be made more effective as a true ally of the profession.

Someone has said that to be a good medical assistant one has to act like a lady, think like a man, and work like a dog. That, we believe, is a true characterization. The assistants' society has had an interesting and worthwhile year. Attendance at the annual meeting showed a substantial increase, and the interest was much higher. Every encouragement should be given this program. The potentiality of medical assistants in the field of public relations would be hard to overestimate. Many of our patients get their first impression of the medical profession from the office assistant, and it is imperative to all of us that this be a good one.

The annual report of the Blue Shield organization shows a healthy condition, as far as the financial situation is concerned, with an ample reserve. A building program is in the mill. This is a necessity which is definitely indicated from the angle of good financing, as well as affording adequate space. The profession can well be proud of the prospect ahead for Blue Shield. The over-all program and development of the plan have been quite satisfactory. There is need of definite continued and even increased co-operation by participating physicians to better implement the economy program which

would mean considerable savings to Blue Cross. Perhaps even the itemization of hospital bills would be indicated.

We believe that Blue Shield, as an organization, has successfully passed the exploratory stage and that an enlarged program is in order. To this end, it would seem advisable to offer more than one type of policy to prospective buyers. It seems reasonable to suppose that one type of policy is not the answer to the desires of the public. Enrollment, which has always been a problem, must be activated to overcome the frequent remark, "Blue Shield would be best if one could buy it."

In our opinion any raise in dues at this time would be disastrous. If necessary, other means to consolidate the financial situation should be seriously considered. More definite work should be done to ascertain the cause for high cancellations in order to keep the plan sold to subscribers. The position of the general practitioner, who has been long-suffering up to date, should be carefully considered in order that he be allowed some means of participating in the payoff which, we noted last year, was in the neighborhood of one and a quarter million dollars. Without his participation, we can hardly expect his loyalty to continue.

It is becoming increasingly important to realize that the success of our future legislative program will depend upon the amount of effort exerted at the grass roots level. This program cannot be made a success through the efforts of those responsible in Topeka; it must be implemented at the grass roots. Each of us must determine now to sell the program of the state society to the legislators before they ever go to Topeka for the regular sessions. In no other way can we accomplish our goal. In the future this effort must be our individual responsibility, and failure to discharge it will cause the entire program to fail. No longer can we "let George or John do it." We will have to get the job done at home. The average doctor is not particularly interested in politics, but if we expect to be good citizens we must, of necessity, take the needed time to work in that field.

We hesitate to comment too critically in regard to the relations of the state societies and the A.M.A. However, there seems to be a considerable amount of justified grumbling as to the over-all policies of the parent organization. This seems to revolve about a feeling that the actions of the A.M.A. are not too democratic. Our own feeling, in attendance at the House of Delegates on several occasions, is that the proceedings are cut and dried before the act, and that the resulting action too often smacks of the rubber stamp technic. Perhaps some of this is due to the lack of vocal ability on the part of the delegates themselves.

The emergency meeting of the House of Delegates in Washington just passed would make one wonder if the democratic process had been eliminated from their consideration. That one was certainly a rubber stamp affair, and we have the opinion that the meatless bone which was tossed to the medical profession at that time was hardly ample consideration for reversal of an 80-year-old policy. Neither can we agree that principles have to be sacrificed at times for politics. Such action does not add to the dignity of the profession. Some 60 million American voters asked for an end to bureaus and the usual game of politics at the last election, and the A.M.A., through its House of Delegates, gave assent to a furtherance of this nuisance.

While there may have been a ray of hope in the result of the last election as far as the menace of socialized medicine is concerned, we have the definite feeling that the threat of the same is not a minimal one. It is true that the scene may have shifted from the national picture to some extent, although nothing done by the present administration up to and including the present time offers any great encouragement along that line. It is certain that the matter has taken on certain international aspects that are not desirable, particularly as far as the efforts of the United Nations and the I.L.O. are concerned, both of which should be carefully watched by the profession for future developments. Neither does the attitude in opposition to the Bricker resolution exhibited by the present administration make one want to throw one's hat and jump for joy.

There is, however, a source of comfort in the fact that the medical profession is not fighting a lone fight in regard to socialism, as was once the case. The cause is being championed by the other professions, most notably the legal profession, and by other organizations of weight and importance in the national scene, and also internationally. This is commendatory. The cause of freedom must never be neglected by an alert, intelligent citizenry. The medical profession should take great pride in the fact that it was the first to realize the danger and take steps to oppose it. We can do much through our efforts in good public relations to defend our freedom if we will be not only good doctors but at the same time good citizens.

The general Society program must go on to completion and continue to expand to meet the emergencies of a constantly changing situation. We have the feeling that the present program, while good, is still not adequate for the ends desired. We need and can have a better program for the people of Kansas. This would require some investment in

personnel and money, but it would certainly be worth the additional cost. We have an ample reserve in the treasury to warrant an expanded program for the next few years on an exploratory basis. This we could well afford to spend as we deem it unnecessary, with our type of organization, to maintain a large reserve of idle money. Then, if the results seemed worthy of continued effort, we could provide for the expense on a permanent basis. We believe that we, as a Society, are at the point where we will need to decide soon between a small program and one that is sufficient unto the need.

The past year has been a strenuous though interesting one. We hope that it will be considered to a certain extent a successful one. We know that if it was successful, and if it is to measure up to the record of past years, most of the credit must go to those who worked so hard and loyally to make it so. In that regard we wish to express our heartfelt appreciation to the officers and members of the Society, to the committees, to the Auxiliary, to the assistants, and last, but not least in any manner, to the loyal and devoted staff in the office in Topeka. Without this fine co-operation on the part of those mentioned, we surely would have failed. And now, au revoir, and thanks again for your support and confidence in our attempt to do a good job for the greatest organization in Kansas.

Warren F. Bernstorf, M.D.

REPORT OF EDITORIAL BOARD

The Editorial Board is currently composed of Dr. Orville R. Clark as editor, Dr. John W. Cavanaugh, Dr. David E. Gray, Dr. Richard Greer, and Dr. Dwight Lawson. Dr. Cavanaugh's term expires at this time, and it will be the duty of the Council to fill this vacancy. Dr. Donald P. Trees of Wichita and Dr. Glen R. Shepherd of Kansas City are associate editors, assisting with the work of the board in their own localities.

The last 12 issues of the JOURNAL have contained 836 pages, or an average of 70 pages for each issue, approximately 60 per cent of which was non-advertising material, and 40 per cent advertising. This is considered a reasonable proportion of advertising material for such a publication. Included in the scientific material were 41 original papers (4 of which were from the Mid-West Cancer Conference); and 6 Clinical Pathological Conferences, 5 Tumor Conference Reports and 11 senior student theses from the University of Kansas School of Medicine.

During this year we have published three special issues. The September 1952 issue was devoted to the problems of nursing, attempting to bring to the members of the Society information regarding recent and anticipated developments in the profession of nursing. Included were articles by hospital representatives and physicians, a survey of the nursing situation in Kansas as made by the Kansas State Board of Health, several resolutions adopted or proposed by various nursing groups, and listings of the schools of nursing in Kansas which were and were not at that time given temporary accreditation by the recently created National Nursing Accrediting Service. It was expected that we would have articles from nurses and nursing organizations expressing their points of view, but circumstances beyond our control prevented our having these articles.

In March 1953 the Seventh Annual University of Kansas School of Medicine number appeared. The greatest part of the work of assembling and editing the papers in this issue was done by Dr. Glen R. Shepherd, of the School of Medicine. Dr. Shepherd did an excellent job of collecting and preparing this material, and deserves full credit for doing so.

The third special issue was the program number in April 1953, with the program for the annual meeting of the Society, the annual reports of councilors, committee chairmen, etc.

There has been some discussion in Editorial Board meetings of the possibility of publishing further "special editions" dealing with associated activities or problems, such as the present problem of the welfare program in the state, about which we have had considerable discussion. We would appreciate an expression of the opinions of the members of the House of Delegates—either officially or individually—as to whether such issues are desirable.

To comply with postal regulations and maintain our present favorable mailing rate, we are now able to send the JOURNAL only to paid subscribers and to those few for whom specific provision is made in the postal regulations, which includes advertisers and advertising agencies. Thus, for the first time, $2.00 of each member's dues is transferred to the JOURNAL, in return for which that member receives the JOURNAL. Now, also for the first time, honorary members and those in service or on leave of absence—those who do not pay dues—receive the JOURNAL only by paying a $2.00 per year subscription (one-half the published subscription price). There are 78 of this group of 227 who have paid for their subscriptions and are receiving the JOURNAL. There are 1,617 dues-paying members on the subscription list, and our total circulation has averaged 2,100 during the past year.

No detailed financial report is included on this occasion, but I am pleased to be able to tell you that the JOURNAL has operated well within its income. Receipts for the year ending May 1, 1953, were $16,958.14, exclusive of the $2.00 paid to the

JOURNAL for each dues-paying member of the Society. During the same period the expenses were $16,110.07. There was a total balance of $4,158.31 on deposit in the bank on May 1. Further details are available to any who may desire to have them, but will not be included here.

During the current year a change in printers has been effected. The JOURNAL has for many years been printed by the Capper Printing Company, of Topeka, but situations have developed which made continuation of this arrangement unsatisfactory. There was no dissatisfaction with the quality of the work, but it seemed impossible to get proofs and final publications at specified times, due to conflicts with other commitments by the printer. In May 1952 our JOURNAL was 10 days late in being mailed, and at the same time we were notified of an increase of approximately 24 per cent in printing charges, to be effective in October 1952. It should be stated, in fairness, that this increase in cost was not unreasonable considering price trends generally, and was not the reason or any part of the reason for considering a change in printers.

Most of our advertising is obtained through the State Journal Advertising Bureau, an A.M.A. bureau which serves the same function for a high percentage of state medical journals. Publication dates, which must be kept in line with other publications using this same advertising, could not be met by the Capper Printing Company, After careful consideration, it seemed that a change of printers should at least be considered.

Bids were requested from six printing firms in Topeka, Lawrence, and Wichita—the only printers in the state who were physically equipped to consider our publication as far as we could determine. At about the same time we received from The Ovid Bell Press, Inc., in Fulton, Missouri, a request that a bid might be submitted for the printing of our JOURNAL, and the entire group were considered together.

After careful consideration of all possibilities, the bid of the Ovid Bell Press was felt to be that which offered the most to us, and after approval by the Council, this bid was accepted. Advantages offered included proofreading by experienced readers who are accustomed to medical terms since this firm also prints the journals published by the state medical societies in Iowa and Missouri, and numerous medical publications of Charles C Thomas, in Springfield, Illinois; publication could be done at the time of the month required by the schedules of the State Journal Advertising Bureau; the charges seemed reasonable, and the printer would receive and store all the advertising plates—a service not enjoyed before.

The only disadvantage which we could find in making such a change was that it was a firm outside Kansas, but in view of the fact that the Ovid Bell Press could offer us specialized medical printing services which no printer in Kansas could offer, the change seemed to be to our advantage. As stated, the Council concurred in this opinion, and the change in printers became effective with the March 1953 issue. We are confident that the change is going to be for the good of the JOURNAL—and so for the Society.

In the past year, as before, the JOURNAL has had the problem of obtaining sufficient scientific articles for the expanded JOURNAL as we are trying to maintain it. As noted in previous reports of other editors, there is within the state sufficient clinical material and medical talent for the development of many good medical papers. However, there is always the problem of getting the articles written, and submitted for publication. Admittedly it is not a simple task, for writing a good medical paper is not done in a spare evening, but requires care and thought over a period of time, reading of related literature, compiling bibliographies, and the like. But it all makes for progress of our Society.

I would like to urge that every member of the Kansas Medical Society seriously ask himself whether he has had some experience that merits consideration for publication as a scientific article. Of course not all will have articles to write, and we certainly could not publish 1,600 articles, but it would be a delightful experience to have a large number of papers from which to choose the best for publication—and would be insurance toward having a good scientific section in the JOURNAL.

One outstanding reason for a continuous shortage of scientific papers is the fact that the JOURNAL is not having the opportunity to publish the presentations given at the annual meetings as was done in years gone by. Specifically, in 1947, 9, and in 1948, 10, of the presentations at the annual meeting were published in the JOURNAL. During the past year we have had only one paper from the 1952 meeting, and at the time of the beginning of this meeting indications were that we would have none from the present session as some of the speakers have come only with the stipulation that they will not be expected to furnish manuscripts of the addresses given. Although it is specifically stated in our By-Laws (Chapter IV, Section 9) that ". . . every paper read before this Society desired by the Editorial Board for publication in the JOURNAL shall be deposited with the Secretary as soon as possible after its presentation . . ." it is apparent that it is increasingly difficult to obtain material from this source, which was, in the past, an excellent reserve on which we could rely for scientific material.

Admittedly not all talks at the annual meetings—or elsewhere—are desirable or suitable for publication as presented. However, realizing that probably not over a third of the membership of the Society hears any one address at the annual meeting, we feel that the JOURNAL has some obligation to disseminate to the full membership of the Society more of the scientific information which was made available at the meeting—and this can be done only through publication of papers which are presented there. We feel that the membership of the Society as a whole could be benefited by making publication of more of these presentations possible.

It would seem that if this section of the By-Laws is to be so completely ignored, it might be better to repeal it.

As a suggestion for supplementary sources of scientific papers, we respectfully suggest that some of the presentations at county society meetings, regional meetings (such as the Golden Belt Medical Society), and the various postgraduate meetings at the University of Kansas would be most welcome by the Editorial Board. It is our sincere desire to make the scientific section of the JOURNAL the "backbone" of each issue, feeling that new medical information is the thing most wanted from a scientific publication by our members. If it is the desire of the membership of the Society to have this sort of JOURNAL, it would assist us in our attempt to make it so if more articles were offered for consideration from all components of the membership.

I would be remiss in making this report to omit an expression of my gratitude to all those whose cheerful co-operation and extensive efforts have made possible the publication of the JOURNAL during the past year. Foremost among these is Miss Pauline Farrell, whose unfailing patience and tireless, efficient work as managing editor have covered up many of the shortcomings of a new editor unfamiliar with most of the problems concerned with publication of such an organ. The sound advice of our executive secretary, Oliver Ebel, his numerous contributions of editorial comment, and general helpfulness in planning have been the great assistance that all of you would expect it to be. As Rueben Dalbec becomes more familiar with Society activities, we look forward to his increasing participation in JOURNAL affairs. To the other members of the Editorial Board I want to express my appreciation for their extensive work in reading manuscripts and editing them for the printer, reading proofs, and for furnishing greatly-needed advice on various matters of policy. To the associate editors, I extend my appreciation for the efforts extended for the JOURNAL in their localities. Dr. Shepherd has, in addition to the preparation of the University of Kansas issue, edited the Clinical Pathological Conferences and senior theses, and helped with preparation of other material from the university. Dr. Robert E. Stowell has edited the Tumor Conference Reports appearing bi-monthly from the University of Kansas School of Medicine, alternating with the Clinical Pathological Conferences.

It has been a pleasure to have served as your editor for the last year. The task was undertaken with humility, and I feel the same as we look ahead, but still have the hope that with continued co-operative effort we can make the JOURNAL more useful to the membership of the Society year by year. This is, after all, the only justification for its existence.

Orville R. Clark, M.D., Editor

BLUE SHIELD

Dr. Henry S. Blake, Topeka, was re-elected president of Kansas Blue Shield at the annual meeting of the Board of Directors of Kansas Physicians' Service, held at the Allis Hotel, Wichita, May 3. Other officials elected are: Dr. Lloyd W. Reynolds, Hays, vice-president; Dr. Francis T. Collins, Topeka, secretary-treasurer, and Dr. R. P. Watterson, McPherson, executive vice-president.

Newly elected members of the board, and the councilor districts they represent, are: District 1, Dr. E. T. Wulff, Atchison; District 8, Dr. H. S. Dreher, Sr., Salina; District 10, Dr. A. M. Cherner, Hays; District 11, Dr. S. T. Coughlin, Larned.

The most important accomplishment of the meeting was the decision to offer extended benefits in the form of an optional rider to the present Blue Cross and Blue Shield agreements. These benefits will include additional treatment of poliomyelitis and eight other diseases. The new coverage is explained more fully in the regular Blue Shield column on Page 267 of this issue of the JOURNAL.

MEDICAL VETERANS' SOCIETY

An informal meeting of the Medical Veterans' Society was held at the Broadview Hotel, Wichita, on Wednesday morning, May 6, following a breakfast. All members of the Kansas Medical Society who are veterans were invited to attend, and approximately 75 were present.

Dr. Henry S. Blake, Topeka, who is a member of the Executive Committee of the national medical veterans' organization, reported on Congressional hearings held recently on H.R. 4495, a bill designed to extend and amend the present doctor-draft law. Dr. Blake, who was one of the witnesses at the hearing, outlined 14 amendments to the bill suggested by the veterans' group and reported that 11 were approved by the Congressional committee. Dr.

John W. Warren, Jr., Wichita, and Dr. Francis T. Collins, Topeka, led the discussion.

Particular attention was given to two proposed amendments. One provided for a ratio of three physicians to 1,000 persons in military service, with only the President of the United States having authority to raise or lower that ratio. That amendment was unanimously approved by the Kansas veterans.

There was also discussion of a proposal that older physicians in Group 3 be given an opportunity to serve along with younger physicians.

Plans were made for presenting the views of the organization to members of the Senate, where hearings were scheduled to begin on May 18.

KANSAS STATE OBSTETRICAL SOCIETY

Members of the Kansas State Obstetrical Society held a dinner meeting at the Hotel Broadview, Wichita on Tuesday, May 5. A constitution for the society was adopted.

Dr. Frank R. Lock, Winston-Salem, outlined experiences in North Carolina in an attempt to lower the maternal mortality rate. Dr. L. A. Calkins, Kansas City, outlined the program for the refresher course in obstetrics to be presented at the University of Kansas Medical Center next November.

The following officers were elected: president, Dr. Robert H. Maxwell, Wichita; president-elect, Dr. Donald A. Anderson, Salina; vice-president, Dr. Anthony B. Busch, Dodge City; secretary-treasurer, Dr. Robert M. Carr, Junction City. The immediate past president, Dr. Robert G. Heasty, Manhattan, remains on the board of directors of the organization.

E.E.N.T. SOCIETY

Specialists in eye, ear, nose, and throat practice held a business meeting at the close of their scientific program at Wichita on Tuesday, May 5. Dr. George F. Gsell, Wichita, was elected president of the group for the coming year. Dr. Thomas L. Hill, Arkansas City, was named vice-president, and Dr. Paul Trimble, Emporia, was chosen secretary-treasurer. The group's delegate is Dr. William P. McKnight, Wichita.

KANSAS SOCIETY OF PATHOLOGISTS

A meeting of the Kansas Society of Pathologists was held at the Lassen Hotel, Wichita, on Tuesday, May 5, following a dinner. Reports were given from all committees, and projects for the coming year were discussed. The following officers were elected: president, Dr. William P. Callahan, Jr., Wichita; vice-president, Dr. William J. Reals, Wichita, and secretary-treasurer, Dr. Bert E. Stofer, Wichita.

KANSAS PSYCHIATRIC SOCIETY

Three Topekans were recently elected to office in the Kansas Psychiatric Society, Dr. William Rottersman as president, Dr. R. C. Anderson as vice-president, and Dr. John R. Adams as secretary-treasurer. Two new councilors of the group are Dr. William F. Roth, Jr., Kansas City, and Dr. Glenn Q. Street, Jr., Wichita.

KANSAS ORTHOPEDIC CLUB

The annual meeting of the Kansas Orthopedic Club was held in Wichita on May 6 with Dr. M. E. Pusitz, Topeka, 1953 president, presiding.

Dr. H. O. Marsh, Wichita, reported that he had written 120 orthopedic surgeons in Kansas, Oklahoma, Nebraska, Missouri, and Arkansas about the formation of a joint orthopedic society and had received 60 favorable replies. The group voted to plan a one-day meeting of orthopedists, tentatively called the Central Orthopedic Society, to be held in Kansas City in the fall, immediately preceding the meeting of the Kansas City Southwest Clinical Society. It was decided that Dr. Marsh should send invitations to all who had replied to his letter, and Dr. Clarence L. Francisco and Dr. W. David Francisco, Kansas City, were asked to arrange details. The function of the new group is to be clinical in character, rather than academic or didactic.

The Kansas Orthopedic Club, with membership available only to those restricting their practices to orthopedic surgery, will meet annually at the time of sessions of the Kansas Medical Society.

Dr. H. O. Anderson, Wichita, who became president of the Kansas group at the Wichita meeting, introduced Dr. Hugh Smith, Memphis, who spoke on fracture work.

Dr. Marsh was named secretary-treasurer of the organization.

KANSAS ACADEMY OF GENERAL PRACTICE

An all-day session of the Kansas Academy of General Practice was held at the Broadview Hotel, Wichita, on Monday, May 4, and included all items scheduled in the program published in the April issue of the JOURNAL.

At the business session, the following officers were elected: president, Dr. George E. Burket, Jr., Kingman; president-elect, Dr. Harry Lutz, Augusta; vice-president, Dr. Clovis W. Bowen, Topeka; secretary-treasurer, Dr. Harold L. Low, Wichita; executive secretary, Mr. Eugene Wilcox, Winfield.

Elected to the board of directors were Dr. Charles L. White, Great Bend; Dr. H. B. Sullivan, Shawnee, and Dr. Bruce P. Meeker, Wichita. Chosen as delegates to meetings of the American Academy of Gen-

eral Practice were Dr. George L. Thorpe, Wichita, and Dr. Arthur W. Fegtly, Wichita.

KANSAS SOCIETY OF ANESTHESIOLOGISTS

Officers of the Kansas Society of Anesthesiologists, elected at the annual meeting of the organization in Wichita, are as follows: president, Dr. L. Lafe Bresette, Kansas City; vice-president, Dr. James L. Jenson, Colby; secretary, Dr. Wray Enders, Kansas City, and treasurer, Dr. Floyd C. Taggart, Topeka.

KANSAS HEART ASSOCIATION

Dr. Lee H. Leger, Kansas City, took office as president of the Kansas Heart Association at the annual meeting of the organization held at Emporia on May 15. Elected to serve with him during the year were the following: president-elect, Dr. Clarence W. Erickson, Pittsburg; vice-president, Dr. G. Loren Norris, Winfield; secretary, Mr. Frank Sullivan, Topeka; treasurer, Mr. Willard Briedenthal, Kansas City.

WOMAN'S AUXILIARY TO K.M.S.

Mrs. I. Joseph Waxse, Oswego, took office as president of the Woman's Auxiliary to the Kansas Medical Society at the close of the 1953 Auxiliary session in Wichita. Assisting her during the 1953-1954 year will be the following officers: president-elect, Mrs. E. R. Millis, Kansas City; first vice-president, Mrs. William J. Braun, Pittsburg; second vice-president, Mrs. James L. Jenson, Colby; third vice-president, Mrs. Clyde E. Partridge, Emporia; recording secretary, Mrs. Edwin M. Harms, Wichita; treasurer, Mrs. H. R. Schmidt, Newton; corresponding secretary, Mrs. John B. Dixon, Parsons.

KANSAS MEDICAL ASSISTANTS' SOCIETY

Mrs. Lerah Lacey, Topeka, was installed as president of the Kansas Medical Assistants' Society at the close of the organization's two-day meeting in Wichita, immediately preceding the meeting of the Kansas Medical Society. The following officers were chosen to serve with her: president-elect, Miss Agnes K. Burns, Kansas City; vice-president, Miss Bessie Parker, Emporia; secretary, Miss Margaret Lenherr, Topeka; treasurer, Mrs. Mary Baker, Wichita.

Three councilors were also named for two-year terms: Miss Pauline Farrell, Topeka, for District 1; Mrs. Hazel B. Fletcher, Hays, for District 4, and Miss Carmen Jiminez, Syracuse, for District 5. Since the meeting the president, Mrs. Lacey, has announced the appointment of Mrs. Pauline Keller, Topeka, as corresponding secretary for the year.

SPORTS EVENTS

Sports events at the 94th annual session, golf at McDonald Park, shooting at the Arkansas Valley Gun Club, and a tournament banquet at the Broadview Hotel, attracted good attendance on Monday, May 4.

Officers of the Kansas Medical Golf, Trap, and Skeet Association, elected at a business session following the banquet, are as follows: president, Dr. James W. Shaw, Wichita; vice-presidents, Dr. H. Lee Barry, Wichita (golf), and Dr. H. E. Haskins, Kingman (trap); secretary-treasurer, Dr. Fred N. Bosilevac, Kansas City; directors, Dr. John L. Lattimore, Topeka; Dr. Charles F. Taylor, Norton; Dr. H. Penfield Jones, Lawrence; Dr. George D. Marshall, Colby; Dr. Ed Ashley, Chanute, and Dr. A. J. Rettenmaier, Kansas City.

A new office was created, that of publicity director, and it was decided that the physician holding this office reside in the city in which next year's tournament will be held. It was suggested also that the publicity director serve as chairman of the sports program for next year. Dr. Frederick L. Ford, Topeka, was elected to the position.

In the championship flight of the golf tournament, Dr. Lattimore and Dr. Jones tied for low gross score with 77's, and by a flip of a coin Dr. Lattimore was declared winner. Dr. John F. Coyle, Coffeyville, and Dr. Harry O. Anderson, Wichita, had first and second low net scores.

Dr. David Taylor, Norton, had low gross score in the first flight; Dr. George D. Marshall, Colby, low net; Dr. Donald J. Cronin, Wichita, second low gross; Dr. Charles R. Rombold, Wichita, second low net.

Winners in the second flight were: Dr. George J. Millet, Larned, low gross; Dr. Robert L. Kasha, Wichita, low net; Dr. Leo K. Crumpacker, Wichita, second low gross; Dr. Frederick L. Ford, Topeka, second low net.

In the third flight the winners were: Dr. H. R. Hodson, Wichita, low gross; Dr. Glenn Q. Street, Wichita, low net; Dr. Raymond J. Leiker, Great Bend, second low gross; Dr. H. R. Smith, Lincoln, second low net.

Among the trapshooters, prize winners were: Dr. James L. Jenson, Colby, best score; Dr. Edward A. Smiley, Junction City, second; Dr. G. A. Surface, Ellis, third; Dr. W. A. Smiley, Junction City, fourth; Dr. James W. Shaw, Wichita, tyro best novice.

Dr. Edward S. Brinton, Wichita, had the best score among the skeetshooters. Other winners were: Dr. Fredrick F. Nyberg, Wichita, second; Dr. Clayton L. Scuka, Wichita, third; Dr. Harry J. Davis, Topeka, fourth; Dr. George L. Gill, Sterling, fifth; Dr. Louis S. Roberts, Wichita, tyro best novice.

Special prizes were won by Dr. James A. McLaughlin, Wichita, oldest golfer participating; Dr. James P. Schweinfurth, Wichita, booby prize, and Dr. Leo

Cowley, Wichita, winner among physicians serving residencies.

Additional golf and shooting prizes were awarded to the following: Dr. Ed Ashley, Chanute; Dr. A. L. Ashmore, Wichita; Dr. Byron J. Ashley, Topeka; Dr. Arthur H. Bacon, Wichita; Dr. Fred N. Bosilevac, Kansas City; Dr. Ward E. Benkelman, St. Francis; Dr. J. A. Blount, Larned; Dr. Marlin W. Carlson, Ellinwood; Dr. Orville R. Clark, Topeka; Dr. Ralph E. Cheney, Salina; Dr. Murray C. Eddy, Hays; Dr. E. S. Edgerton, Wichita; Dr. Richard R. Howard, Winfield; Dr. W. C. Goodpasture, Wichita; Dr. George F. Gsell, Wichita; Dr. Wilson K. Hobart, Topeka; Dr. Ernest E. Harvey, Salina.

Dr. Millard W. Hall, Wichita; Dr. James H. Holt, Wichita; Dr. Joseph J. Hovorka, Emporia; Dr. A. E. Hiebert, Wichita; Dr. Leeman C. Joslin, Harper; Dr. Leslie E. Knapp, Wichita; Dr. Charles V. Minnick, Junction City; Dr. H. O. Marsh, Wichita; Dr. Clifford J. Mullen, Kansas City; Dr. R. Morris, Wichita; Dr. Fred J. McEwen, Wichita; Dr. Weir Pierson, McPherson; Dr. Will D. Pitman, Pratt; Dr. A. J. Rettenmaier, Kansas City; Dr. Martin J. Rucker, Sabetha; Dr. Dean Jack Tiller, Wichita; Dr. Charles F. Taylor, Norton, and Dr. J. A. VanCleve, Wichita.

COUNTY SOCIETIES

A joint meeting of the Nemaha County Medical Society and Auxiliary was held at the Community House, Seneca, on April 29. Physicians and their wives from Brown and Marshall counties were also guests. Dr. W. Clarke Wescoe, dean of the University of Kansas School of Medicine, was guest speaker, discussing the operation of the school.

The Barton County Medical Society sponsored a surprise party honoring Dr. H. W. Jury, Claflin, on the occasion of his 78th birthday. Forty physicians and their wives attended the dinner. Dr. M. O. Steffen, Great Bend, was master of ceremonies.

A meeting of the Tri-County Medical Society was held at Hardtner on April 15. Two Wichita physicians, Dr. N. C. Nash and Dr. Paul H. Wedin, presented a program on "Cancer of the Lung."

A clinical pathological conference was the feature of a meeting held by the Sedgwick County Medical Society at the Broadview Hotel, Wichita, on May 19. Taking part were Doctors B. E. Stofer, William J. Reals, William P. Callahan, Jr., C. T. Hagan, and J. R. Fulton.

Officers for the year 1954 were elected at the meeting, as follows: president, Dr. Harold F. O'Donnell; vice-president, Dr. Norton L. Francis; secretary, Dr. Ernest W. Crow; treasurer, Dr. Bert E. Stofer; censor, Dr. Earl L. Mills. Elected to three-year terms on the board of directors were Dr. William P. Callahan, Jr., Dr. Howard C. Clark, and Dr. George F. Gsell.

Research Grant to K. U.

A $34,000 research grant from the National Heart Institute has been awarded Dr. E. Grey Dimond, Dr. Tom R. Hamilton, and Dr. Kurt Reissmann, of the University of Kansas Medical Center, for research in the field of experimental pulmonary hypertension.

The project will consist of inducing rheumatic fever in animals for the purpose of producing mitral stenosis, the usual heart valve damage occurring in human beings after rheumatic fever. Measurement of blood pressure and oxygen content of the blood will help determine the effect of heart valve damage over a period of time. The ability of heparin to protect the heart against streptococci will also be studied.

Film Supplement Available

The Committee on Medical Motion Pictures of the A.M.A. announces publication of a supplement to the list of health education motion pictures cleared for use on television. Listed are 38 pictures approved since publication of the original list in 1951. A supplement to the list of films available through the A.M.A. motion picture library is also available. Copies may be secured from the Committee, 535 North Dearborn Street, Chicago 10, Illinois.

DEATH NOTICES

Anson Sidney Lutgen, M.D.

Dr. A. S. Lutgen, 75, an active member of the Northwest Kansas Medical Society, died at Colby on April 23, after having suffered a cerebral hemorrhage on April 7. A graduate of Lincoln, Nebraska, Medical College, Dr. Lutgen practiced in Wayne, Nebraska, for many years, moving to Colby in 1949. He was a member of the Rotary Club and of the Chamber of Commerce in Colby.

Clinical Pathological Conferences*

CASE PRESENTATION

Dr. Neal Jenkins, resident, medicine: The patient, a 67-year-old white male, was admitted twice to KUMC. His first admission was 11 months prior to the second and last admission.

Chief complaints on the first admission were weight loss of 20 pounds in two months, nervousness of four years duration, and abdominal pain.

The patient, a carpenter, was well until approximately four years before this admission, when he began to note lower abdominal pain of dull, aching character located primarily in the suprapubic region. This was not associated with any genitourinary or gastrointestinal symptoms, but was aggravated by lifting. The discomfort also was associated with nervousness which consisted of a tremor of the hands at rest but more severe on movement. Approximately two years prior to this first KUMC admission, the patient was seen by his local physician with the chief complaint of pigmentation on the arms and back and some mottling of the skin of his mouth. Blood pressure 70/40, weight 125 pounds.

The patient improved during treatment, with subsequent rise to 140 pounds body weight. He remained in fairly good health until approximately two months prior to admission, when he began to note progressive weight loss associated with extreme weakness. X-rays of the kidneys, stomach, and colon done by the local physician at that time were essentially negative and the patient was referred to KUMC for evaluation.

The family history was essentially negative.

Past history revealed a syphilitic infection (chancre) at age 19, the treatment for which the patient did not remember, and a mumps orchitis at age 15.

System review was essentially negative except for partial deafness of six years duration and transient episodes of ankle edema.

On physical examination the patient appeared to be poorly nourished and chronically ill, and he constantly moved hands, arms, and legs in nervous gestures. Pulse was 80, respiration 20, blood pressure 155/80, weight 123 pounds. An area of brownish pigmentation, 3 by 4 centimeters, was noted over the posterior thorax, and similar lesions were noted in the buccal mucosa. The remainder of the head and neck was essentially normal. Examination of the chest revealed a slight left scoliosis of the lower thoracic vertebrae with apparent increase in anteroposterior chest diameter although the thoracic excursions were good. The lungs were clear to percussion and auscultation. The heart was not enlarged, the sounds were distant, and a grade I systolic murmur was heard at the base and at the apical area.

The smooth, non-tender liver edge was palpable three fingers breadth below the right costal margin. The spleen was questionably palpable at the left costal margin. Slight tenderness was noted two centimeters below the umbilicus, but no other tenderness or palpable mass was noted. The right testicle was atrophic. A small 2 mm. nodule was found attached to the epididymis of the left testicle. No hernias were present. Rectal examination revealed a smooth, hard, non-movable enlarged prostate. One-plus edema of the ankles was noted bilaterally.

Neurological examination revealed intact cranial nerves. Superficial and deep reflexes were physiological, and no pathological reflexes were noted. The tremor of the hands and legs previously described was seen. No sensory changes were noted.

Laboratory examination: urinalysis, sp.gr. 1.014, trace albumin, sugar negative, occasional granular casts, two to three pus cells per high power field; RBC 4,440,000; WBC, 6,500; hemoglobin 12.5 grams (81 per cent).

Differential: 53 polys, all filamented; 39 lymphocytes and 8 monocytes. Serology was negative. NPN 45, creatine 1.8, sugar 86 mgm. per 100 cc., serum potassium 5.1 meq., serum chloride 108 meq. Cholesterol 168 mgm. per 100 cc., with 48 per cent esters. Gastric analysis revealed no free hydrochloric acid. Acid phosphatase 0.41, alkaline phosphatase 2.8. Thorne test with adrenalin base line of 77 eosinophiles decreased in four hours to 38 eosinophiles. Kepler-Power water test: night volume 1495 cc.; the largest single hourly day volume was 182 cc. This gave a factor for the Kepler-Power "B" test of 1.3. 17-ketosteroids 12.17 mgms. in 24 hours. Erythrocyte sedimentation rate was 10 mm. in one hour.

Following the completion of these diagnostic studies, the patient was discharged to his local physician. The patient gained weight and resumed his occupation as a carpenter. He remained in good health for 10 months, until approximately one month prior to his second admission, when he began to note cough and hoarseness. He was hospitalized in his local hospital for approximately two weeks prior to his admission because these symptoms persisted, and was subsequently referred to KUMC for evaluation.

The physical examination at the time of the sec-

* From the University of Kansas Medical Center. Edited by Glen R. Shepherd, M.D., and Mahlon H. Delp, M.D., from recordings of the conference participated in by the departments of medicine, radiology, and pathology, and the junior and senior classes of medical students.

ond admission showed an extremely emaciated white male who seemed to be mentally confused and did not know the reason for his admission to the hospital. Pulse was 120, respiration 22, blood pressure 150/90, temperature 98.8° F. The eyes were sunken and the neck veins quite distended. The head and neck otherwise were essentially normal.

Examination of the chest revealed a Cheyne-Stokes type of respiration with a loud ronchi in the right anterior chest. Coarse dry rales were heard in both posterior lung fields, and dullness was noted in the right base posteriorly. The PMI was in the fifth interspace 2 centimeters outside the midclavicular line. A grade I systolic murmur was heard at the mitral and aortic areas.

A slightly tender liver was palpable four fingers breadth below the costal margin. The spleen was not palpable. A one- to two-plus edema of the legs was noted, more marked on the right. A generalized hyporeflexia was noted.

Laboratory examination: urinalysis, faint trace albumin, sugar negative, many granular casts, occasional hyaline casts, and 12 red blood cells per high power field; RBC 3,950,000; WBC 9,000; Hb 11.8 gms. (76 per cent).

Differential: 76 polys, all filamented; 10 lymphocytes, one basophil, 13 monocytes. NPN 25, creatine 1.0, sugar 80, CO_2 30.4, serum chloride 100 meq. Erythrocyte sedimentation rate was 20 mm. in one hour, a straight line curve. No ova or parasites were seen in the stools. Prothrombin time was 30 per cent of normal. Bronchial washings for the T.B. culture were negative at the end of eight weeks.

On the day following admission, laryngoscopy and bronchoscopy were done. A nodular mass was found involving the right vocal cord, and a biopsy was taken. The following day the patient became more irrational and almost stuporous; on the third day, he was found to be in a semi-comatose state, with a pulse rate of 130, blood pressure 140/100, respiration 48, and coarse rales in bronchi and both lung fields. Treatment consisted of oxygen by nasal catheter, intravenous aminophyllin, intermittent tracheal suctioning, and digitalization. The condition of the patient had improved markedly in four days, although fluid was still noted in both lung fields. On the 10th hospital day, at about 3:45 p.m., the patient felt severe pain in the right chest. A loud pericardial friction rub was noted, and the patient was treated with morphine with relief of the pain. He subsequently was placed at complete bed rest, given a low sodium diet and papaverine grains one every four hours.

The following day a gallop rhythm was noted, and throughout the remainder of the patient's hospital course there was a daily temperature elevation from 99° to 100.3°. Penicillin and subsequently terramycin were given. The condition of the patient progressively deteriorated. A paroxysmal ventricular tachycardia developed during the 20th hospital day. In spite of supportive measures, the patient died at 10:15 p.m. the following day.

Dr. Mahlon H. Delp, Chairman: Significant, and I believe of some interest, is not only the patient's age but the presenting complaint of pain in the lower abdomen. Two significant physical findings at that time were the abnormal and unusual pigmentation of the skin and a blood pressure which was recorded as 70/40.

We can assume that subsequently the patient must have been treated in some successful manner because for the following two years he was relatively symptom-free. Then he presented himself with something rather unusual, namely, difficulty in respiration and hoarseness. He subsequently was sent here on the nose and throat service.

Of further interest is the course in the hospital. First of all, the patient developed a severe complication following a minor nose and throat procedure, laryngoscopy with biopsy. Whether or not it was a complication of this procedure, I am not certain. Subsequently, he had signs of extreme dyspnea associated with tachycardia and a pain in the chest.

The intern who saw him within a matter of minutes after the original complaint states that the patient had a loud friction rub over the entire anterior portion of the chest. No comments were made as to how long this friction rub lasted, but it probably was several hours. The patient was given several small doses of opiate and apparently the friction rub aroused no comment subsequently, but he continued to have some pain for a number of hours. About five doses of opiates were given before he was finally sufficiently relieved. There is frequent reference to the patient's abnormal mental state. On the admission day, his wife told the attending physician that the patient recently had been disoriented each night.

We are charged with the responsibility of making a diagnosis, if possible, as to the illness two years prior to this last hospital admission, the illness at the time he arrived here, and finally, the terminal event in this case.

May we see the x-rays?

Dr. Charles Montgomery (radiology): These two films were taken during the first admission. The other three films were taken two weeks before death. The first chest film was interpreted as essentially normal. The markings were a little accentuated—a hard quality interpreted as some degree of fibrotic change but essentially a normal chest. No pathology could be demonstrated in the KUB film. The kidney shadows were not entirely outlineable.

The film taken a year later shows an entirely different picture. There was opacity in each of the bases

in a meniscus fashion, complete opacity characteristic of a pleural exudation. The cardiac shadow in its entirety is not outlineable because of the opacity. This was interpreted as an enlarged failing heart, with pleural effusion.

A portable film a few days later showed little change from previous ones. And again there was the same picture five days later.

DIFFERENTIAL DIAGNOSIS

Mr. Leo Cooper (senior student): Today's case presents a few conflicting findings which tend to confuse one's thinking as to the cause and course of this patient's illness.

One is obligated to consider the findings two years prior to his admission here because they are suggestive as to his later course. At that time the patient had lower abdominal pain, fever, pigmentation of arms and back, mottling of the oral mucosa, and blood pressure of 70/40. This patient then received treatment—we do not know for sure what it was. He remained in fairly good health for approximately two years, thereafter developing marked weight loss and extreme weakness. It was at that time that he was admitted here for diagnostic work-up. He was discharged and, we presume, again received treatment from his local physician. He responded and remained fairly well for approximately 10 months, then developed cough and hoarseness which persisted, and again he was admitted to this hospital.

On this second admission the patient was extremely cachectic, confused, and mentally disoriented, and obviously in congestive failure. Such a clinical progression of events is strongly suggestive of chronic adrenal insufficiency. However, there are several other conditions which should be considered.

Hemochromatosis may present a picture similar to this, with a pigmentation that could be confused with that of chronic adrenal insufficiency. However, such pigmentation tends to be more generalized and is a bronze tint of the skin rather than the brown pigmentation one sees in chronic adrenal insufficiency. This patient had weakness and weight loss, which are common complaints in hemochromatosis, probably due to liver involvement. The liver was palpable, which would go along with the diagnosis. Diabetes is said to occur in at least 75 per cent of cases of hemochromatosis. The patient had a normal blood sugar on the first admission.

Portal cirrhosis is a possibility in this case. We have a negative history as far as dietary insufficiency and alcoholism are concerned. No ascites was present, although it is a rather common finding. Weakness and weight loss are common complaints in portal cirrhosis. On the last admission here, this patient did have a prothrombin time of 30 per cent of normal. Part of this might be due to the presence of congestive failure.

Pellagra is another possibility. Again, there is no dietary history. Pellagra can produce the symptoms presented. The pigmentation in pellagra might resemble that in adrenal insufficiency. It starts out as an erythematous rash on the exposed parts of the body, and the skin becomes thick and crusty. Stomatitis and glossitis are common—we do not have those in this case. Other findings suggestive of pellagra are achlorhydria, which this patient did have, low blood pressure, weakness and tremor, and marked mental changes.

Malignancy of the gastrointestinal tract should be mentioned in the case of a patient of this age who had a progressive weight loss and weakness. However, the fact that the history extends over such a long period of time and that improvement occurred after treatment would lead one to disregard this possibility.

Chronic adrenal insufficiency must receive prime consideration in any case with hypotension, pigmentation, weight loss, and extreme weakness. Additional findings compatible with this diagnosis were nervousness, restlessness, and movements of the hands and arms. Abdominal pain is said to occur in one-third of such patients. This patient's heart was not markedly enlarged; one would expect to find a small heart. Sounds were reported to be distant on the first examination here. The liver was palpable; visceral ptosis is said to occur in many cases of chronic adrenal insufficiency.

Laboratory findings which would be compatible are the achlorhydria, the relative lymphocytosis, and a strongly positive Kepler-Power water test.

On the other hand, there are several findings which are contradictory to such a diagnosis. This patient had a Thorne test which indicated an active adrenal cortex. This test is not infallible. The blood pressure on the first admission was 155/80 and 150/90 on the second. This might be explained if he had received treatment with desoxycorticosterone acetate. We might expect to see an electrolyte pattern of greater imbalance than this patient showed. However, treatment might cloud the picture. Also, one would expect to find a more marked decrease in the 17-ketosteroids. I have no explanation as to why the ketosteroids were not reduced more. Absence of an eosinophilia would be expected and was present.

If we assume that this patient did have chronic adrenal insufficiency, the next question would be whether it was primary or secondary to pituitary involvement. The clinical picture did not follow that of pituitary involvement—one would expect to find changes in thyroid action, such as hypoactivity, or a

hypogonadal activity. There is no evidence of either in this case.

As to the etiology of primary adrenal insufficiency, it is believed that approximately 50 per cent of cases are due to tuberculosis and 50 per cent are due to unknown causes. Occasionally neoplasm, amyloidosis, or hemochromatosis might cause atrophy of the adrenal cortex.

I believe it probable that this patient may have had tuberculous involvement. The x-rays are not too suggestive of it. No skin test was reported. Bronchial washings were done but were negative. This patient did have a small nodule which was palpated in the epididymus, which might have been a small tuberculoma. There was a nodular mass involving the vocal cord. One might think that this was tuberculoma.

My final diagnosis would be Addison's disease.

As to the terminal event—after bronchoscopy was done this patient developed, supposedly, pulmonary edema. He was treated intensively and seemed to improve rapidly. A few days later, severe pain developed in the right chest. One would think of a pulmonary embolus.

As to myocardial infarct—after looking through the electrocardiograms, I'm still not sure that that was the diagnosis. However, one would think of it because of the nature of the pain.

This patient might have had an organizing pneumonia during that time. The fact that his fever and white count were not elevated would not mean too much in this case; these patients have very poor resistance and poor defense mechanisms in general.

As to the terminal event, I assume that ventricular fibrillation followed the paroxysmal ventricular tachycardia.

CLINICAL DISCUSSION

Dr. Delp: At this point we seem to be reasonably agreed that the patient had Addison's disease. We still must determine whether or not he did have a myocardial infarct. There does not seem to be agreement that he died of a ventricular tachycardia or ventricular fibrillation.

We need to answer whether or not the disease itself, if it was Addison's disease, predisposed to any of these terminal situations. Dr. Bolinger, will you comment on any of these questions that you wish?

Dr. Robert E. Bolinger (medicine): I find it difficult from the information given here to diagnose Addison's disease. I do not think the laboratory tests support the diagnosis of Addison's disease. We do not know whether or not he was in congestive failure at the time the Kepler-Power test was run, and that would, of course, throw it off. The eosinophiles also were out of line, and so were the 17-ketosteroids. I realize that detecting Addison's disease is frequently confusing—it sometimes comes out to the necessity of running a therapeutic test. I do not know what kind of therapy was given, so that's of little help. I cannot make a diagnosis of Addison's disease from the information we have here.

As to the terminal episode, I suspect that he had Addison's disease and had been treated with desoxycorticosterone—I don't know that he was. That predisposes, I think, to a cardiovascular type of demise. It would predispose to the development of pulmonary edema. I think, as far as the terminal series of events go, that probably this patient had a myocardial infarction, possibly an anterior septal infarct following surgery, and death from then on was as has been discussed.

Dr. Delp: Our laboratory evidence did not seem to establish the diagnosis and I had extracted from the history the fact that after this patient was dismissed from the hospital a year and a half ago he was placed on desoxycorticosterone, first by parenteral injection and subsequently by pellet implantation. It does seem that for a time the patient did rather well on that medication.

Dr. Bolinger: Some pellet influence going on at this time or an unknown amount of desoxycorticosterone effect certainly would predispose to the pulmonary edema this patient had.

Dr. M. G. Berry (medicine): If this patient had congestive failure, if it was not due to desoxycorticosterone, he certainly had a paradoxical type of disease that would be difficult to treat, because of the tendency of the desoxycorticosterone in a case of Addison's disease to defeat the very thing you try to accomplish in the treatment of congestive heart failure.

I do not know the cause of this patient's death. There are many possible causes of death following bronchoscopy. The fact of the matter is that bronchoscopy is not a simple procedure. A little leak of air out into the chest is a possibility here, although I suppose some of those films were taken after the bronchoscopy. Furthermore, I am not trying to promote Dr. Hayman's "crunching sounds," but there still is an outside possibility of an emphysema. Many things can happen other than a myocardial infarct.

Dr. Delp: Dr. Dimond, there must be more information in the electrocardiograms than has been brought out. Do you have any comments about this?

Dr. E. Grey Dimond (medicine): My only contact with these EKG's was that dim view we saw. The thing that impressed me was the increasing degree of left axis deviation; that could indicate left heart failure.

One EKG showed a marked RST segmental deviation in V_2 and V_3, though from here I could not see an R wave. It looked to me like they all went

right across. That is ample evidence of myocardial infarct.

You could notice, just after the last ventricular complex, a P wave, then a little pause, then the P

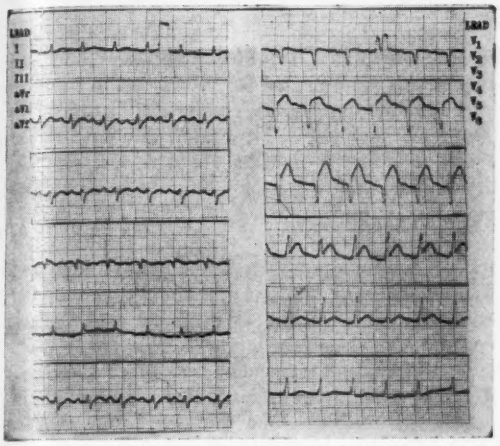

Figure 1. EKG taken on 10th day, showing sinus tachycardia, marked elevation S-T segments in VI, 2, 3, and V4, and depressed S-T segments in V6, suggesting anterior myocardial ischemia. This tracing shows no evidence of pulmonary infarction.

wave finally recapturing the AV rhythm, followed by sinoauricular rhythm.

Just as a final thought, this patient died of left heart failure, died with left heart disease and myocardial infarct, ventricular tachycardia, and ventricular fibrillation. I think Dr. Berry's point is very good, though, that this may have been a case of mediastinal emphysema.

Dr. Delp: Do you have any remarks, Dr. Rankin?

Dr. Thomas J. Rankin (medicine): At one point in the terminal picture, before his cardiac difficulties, he had something which resembled an upper mediastinal syndrome. So I feel that a carcinoma (which I cannot locate), possibly in the upper respiratory system or possibly in the mediastinal glands, could be a part of this picture.

Neither can I feel certain that an infarct necessarily was part of the terminal picture. It is a little hard for me to accept a patient who had pain which was attributed to infarct, in whom a loud friction rub was heard almost at the moment of the onset of that pain. So I wonder if the patient possibly had a pulmonary infarct adjacent to the pericardium, with a contiguous pericarditis from the pulmonary infarct, with the same subsequent train of events following through from there.

Dr. Delp: Perhaps this patient had an infarct several days before the friction rub was heard. I don't think we can disprove that.

PATHOLOGY REPORT

Dr. J. David Robertson (pathology): At autopsy this was an extremely emaciated individual. Body length was estimated at about 5 feet, 10 inches and weight 100 pounds or less. The lungs showed a few apical scars, some atelectasis of the left lower lobe, and were somewhat edematous but otherwise not remarkable. The mediastinum was negative.

The heart showed an area of fibrinous exudation over the apex and a notable thinning of the wall of the myocardium over this region, about the size of a silver dollar. The wall was thinned to 4 mm. in this involved area. The anterior portion of the septum was discolored with areas of hemorrhage and reddish brown discoloration. There was also a silver patch over the right side of the left ventricle. The anterior descending branch of the left coronary artery contained a thrombus about 2 cm. from the ostium. The thrombus was several millimeters long.

The spleen contained a large area of infarction of a yellowish brown color. The branch of the renal artery going to this portion of the spleen contained a thrombus.

The thyroid contained a small mucinous cyst on the left. The adrenals were of about normal size. The cortex was somewhat thin. The testes were of normal weight; one of them weighed 5 grams less

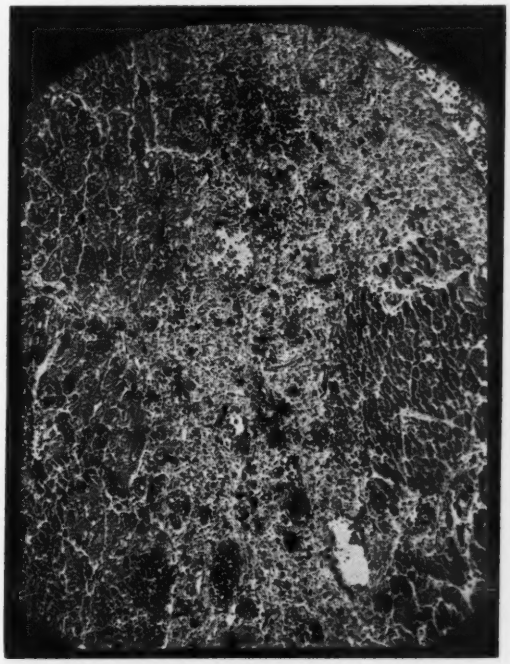

Figure 2. Acute myocardial infarction with necrosis of myocardial fibers on the right and less degenerated vacuolated fibers on the left. In the center there is a junctional zone showing loss of muscle and displacement by edema, congestion and hemorrhage with minimal inflammatory infiltration.

than the other. The basilar artery showed a moderate degree of arteriosclerosis. There was an area of softening in the left parietal-occipital cortex, about a centimeter or so in diameter. There were petechial hemorrhages throughout this region.

Dr. H. I. Firminger (pathology): There was in the heart an area of infarction, a fairly recent infarct with a thrombotic occlusion of the coronary artery to account for it. Microscopic section of the coronary showed that it was filled with a thrombus with early organization which totally occluded that vessel. There were also in the heart areas of fibrosis, one of which was large enough to make us feel that there was an older infarct there also. There was a fairly diffuse fibrosis in the myocardium.

The lungs showed some pneumonia with a few polymorphonuclear leukocytes in the focal areas, with destruction of the alveolar walls in those areas, suggesting an early attempt to form abscesses.

The biopsy taken from the larynx in surgical pathology showed acute and chronic laryngitis. A section taken from the region of the biopsy at the time of autopsy showed lack of re-epithelialization and fibrous tissue beneath.

The section of the adrenal showed that the cortex was definitely abnormal; there should be cords of cells running throughout the length of the cortex. Instead we found scattered islands of cells and a fairly anuclear type of connective tissue stroma. These cells were small and shrunken; there was little lipoid in them. They appeared to be inactive.

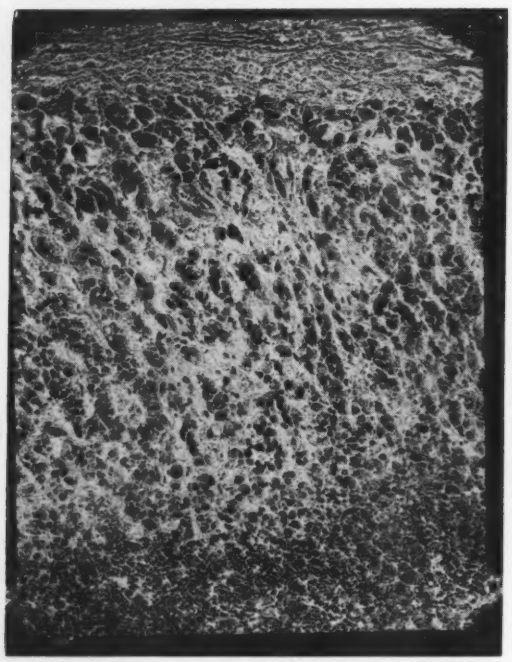

Figure 3. One of the most atrophic areas in the adrenal cortex, showing loss of typical cord-like structure due to dropping out of cells and shrinkage with depletion of lipoid in the remaining cortical cells. The reticular zone (at bottom) is congested and acutely hemorrhagic.

A section from a pigmented area of the skin revealed the pigment was due to melanin deposition in the basal layer.

The pituitary grossly was somewhat smaller than normal. Microscopically, I could not see too much wrong with the pituitary except for some increase in interstitial fibrous tissue. There were both eosinophiles and basophiles in this pituitary.

The thyroid was nodular, about normal size, but the nodules varied greatly in their microscopic appearance.

The testes showed an area of focal atrophy which was not surprising considering the age of the patient. The vessels were thickened, as one might expect. Some tubules were not as atrophied as others, in fact did not show very much atrophy. There was a large loss of spermatogenesis, again not surprising. There is a good deal of variation in people of this age in what the testes show.

The prostatic ducts had the changes one would expect. A squamous metaplasia of the prostatic ducts indicated a lack of androgen activity.

FINAL ANATOMICAL DIAGNOSIS

Primary:

Arteriosclerosis of the coronary arteries, moderate, with thrombotic occlusion of the anterior descending branch of the left coronary with beginning organization.

Myocardial infarcts, recent and old.

Focal fibrous thickening of pericardium.

Bronchopneumonia with early abscess formation.

Hydrothorax, left (100 ml.).

Atelectasis, lower lobe left lung and part of lower lobe of right lung.

Acute passive congestion of liver.

Arteriosclerosis of aorta, splenic and renal arteries, slight; cerebral arteries, moderate.

Sclerosis of anterior leaf of mitral valve.

Arteriolar nephrosclerosis, slight.

Thrombotic occlusion of superior branch of splenic artery.

Recent infarct of spleen.

Encephalomalacia, left parietal-occipital area.

Decubital ulcers of skin over sacrum and left buttock.

Accessory:

High origin of right coronary artery.

Calcified nodules, lower lobes both lungs.

Fibrous thickening of pleura at apices of both lungs.

Partial atrophy, adrenal cortices (history of possible Addison's disease).

Focal fibrosis, pituitary gland.

Nodular goiter.

Focal hyperpigmentation of skin.

Subcutaneous pellets in left posterior chest wall (history of implantation of DOCA pellets).

Focal atrophy, both testicles (history of orchitis 52 and 37 years ago).

Squamous metaplasia of prostatic ducts.

Nodular hyperplasia of prostate.

Chronic inflammation and fibrosis, right vocal cord.

Solitary retention cyst of right kidney.

Absence of appendix and healed right anterior abdominal wound (history of appendectomy 35 years ago).

DISCUSSION

Dr. H. I. Firminger: By and large Addison's disease is due to one of two things: idiopathic type of atrophy of the adrenal cortex or tuberculosis. There are other causes but these are the chief ones. It used to be thought that tuberculosis accounted for most of the cases. However, in recent years, increasing numbers of cases of idiopathic atrophy are being reported and seen. Whether it actually is increasing or whether our attention is being called to it, I do not know. We do not know the causes of atrophy of the adrenal cortex. All proposed explanations have not been satisfactory.

Changes seen in the adrenals in Addison's disease may involve the medulla, but the cortex apparently is mainly involved. In earlier literature you will find considerable disagreement as to whether the cortex or the medulla was important.

Atrophy of the adrenal cortex produces a number of changes in body function. There is regulation of the electrolytes by the adrenal cortex. Sodium and chloride are important. If one loses sodium chloride, one also loses the water which it holds, and a decrease in plasma volume results. Because of this, blood pressure tends to be down with a consequent reduction in renal function. The relationship of sodium and potassium is disturbed in adrenal cortical deficiency, with an increase in potassium as well as a fall in sodium.

In addition, the adrenal cortex is important in the formation of glucose, protein, and the proper utilization of fats. Hypoglycemia thus occurs in these cases with a tendency to hypoglycemic shock and sensitivity to insulin. Some decrease in androgen production may occur because some adrenal cortical substances show androgenic activity. Immunity reactions apparently are disturbed; I think it is clearer today that the adrenal cortex is important in antibody production and the adrenal cortical extracts do have effects on lymphocytes and other antibody forming cells. Also, there is a disturbance in pigment metabolism which is not well understood.

Many things in this case do not go along with a clear cut diagnosis of Addison's disease. This adrenal showed an unusual amount of cortex for Addison's disease. I think that may account for the fact that there were more ketosteroids in the urine than would be expected and that the evidences of Addison's disease were not too pronounced.

As for the relationship of Addison's disease to the myocardial condition, other reports have cautioned about the necessity of care in starting these patients on desoxycorticosterone acetate. Thorne originally advised that one take at least four weeks to establish a minimum dosage and give only aqueous extracts before starting to give pellets, because you are apt to rehydrate the patient quickly, produce pulmonary edema, produce myocardial insufficiency, and so on. So I feel that it is a possibility in this case that the desoxycorticosterone actually was important in the terminal event.

On the other hand, due to the chronic changes in the myocardium, I cannot help feeling that this patient really had some diseases which were antagonistic, as Dr. Berry suggested. This patient had an arteriosclerotic disease which was affecting the myocardium primarily, with a concomitant adrenal insufficiency, whether you want to call it Addison's disease or not. Desoxycorticosterone acetate antagonizes the myocardial condition. That probably took place to some extent in this case.

If I were to reconstruct this case, I would do it this way: This patient had evidences of adrenal insufficiency since before his first hospital admission. He probably had also a certain amount of myocardial insufficiency due to arteriosclerosis and previous infarctions and focal fibrosis in the myocardium. He was treated successfully with desoxycorticosterone and got along well, but his heart was failing. He showed evidences of the antagonism, perhaps, between the desoxycorticosterone and his myocardium which perhaps contributed to pulmonary edema. Then he came in to KUMC with an incidental sort of thing—acute and chronic laryngitis. Either as a result of the laryngeal biopsy or coincident with it, he developed something which most people have ignored—he became irrational and almost stuporous on the day following the surgery, and then was in a semicomatose state. I think this is accounted for by the encephalomalacia which we found in the left parietal-occipital lobe, which I presume to be embolic or perhaps thrombotic, in addition to the arteriosclerosis of the cerebral vessels. This area of softening was entirely compatible with a course of appromixately three weeks.

Subsequently, he recovered from this, and then he developed a thrombosis in the coronary artery, with acute myocardial infarction, which was more than he could stand, and death occurred from the myocardial infarction.

Dr. Delp: Any final questions?

Dr. Jenkins: In regard to this patient's state of confusion, I have the clinical impression that it was associated with and at least partially attributable to the congestive failure—that is, that when the myocardial output improved following the use of digitalis, the patient's sensorium cleared markedly. It is my feeling that cerebral anoxia or hypoxia would produce the cerebral symptoms as much as any small lesion that might have been found in the brain at postmortem. That merely happened to be a residuum of the hypoxia.

SUMMARY

Dr. Delp: There are many instructive features in this case. If this man did have Addison's disease, it is of some interest that we had to make the diagnosis upon the signs and symptoms physically rather than upon the laboratory evidence. We can say in the next breath, "Your laboratory survey at the time he was in here previously was not as complete as it should have been." That's granted—I do not think that it was.

Collectively, we commonly think of patients with Addison's disease as dying in an acute cortical insufficiency. That is a common terminal event. Dr. Firminger has pointed out that desoxycorticosterone is a dangerous substance when administered to any patient, and especially to patients who already have evidence of heart disease.

It is reasonably certain that this man was in congestive failure on arrival. Had this been recognized immediately, the terminus might have been somewhat different.

And lastly, if we really did think that he needed cortical extract or cortisone, he should have been getting much larger doses. He was receiving token doses. He could never have been brought out of crisis with such doses.

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3. Thorn, G. W. et al: Advances in the diagnosis and treatment of adrenal insufficiency, Am. J. Med. 10:595-611, (May) 1951.

Red Cross blood collection last year reached an unprecedented total of 4,186,000 pints. To meet all blood requirements, civilian and defense, the Red Cross must collect over 4,700,000 pints in the 1952-1953 fiscal year.

The United States Department of Agriculture reports that for every four persons sitting down to a meal in 1950 there will be a fifth person in 1975.

ACTIVITIES OF MEMBERS

Dr. Ralph J. Metcalf, El Dorado, spoke on "New Drugs" at a recent meeting of the El Dorado Nurses' Alumnae Association.

Dr. and Mrs. A. R. Chambers, Iola, are spending two months in Europe. They will attend the coronation of Queen Elizabeth in England and a meeting of Rotary International in Paris and will also visit in Italy and Switzerland.

Dr. Orville R. Clark, Topeka, spoke on cancer before a public meeting in Burlingame recently under the sponsorship of the Burlingame Business and Professional Women's Club.

Dr. Niles M. Stout, Lyndon, has been appointed health officer of Osage County, succeeding the late Dr. C. W. Beasley.

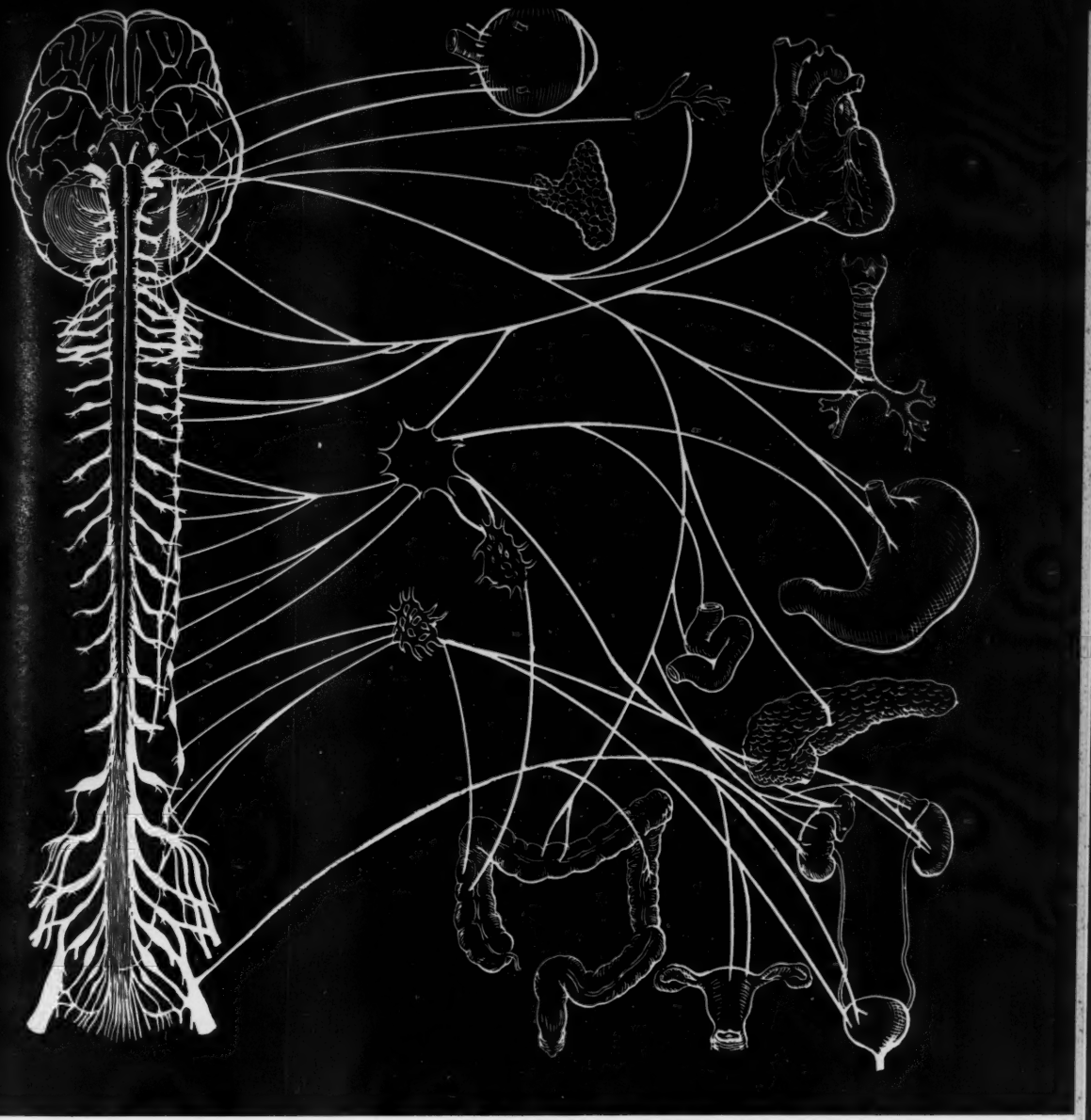
Dr. Howard C. Clark, Wichita, spoke on "The 50th Anniversary of the Sedgwick County Medical Society" at a recent meeting of medical assistants in Wichita.

Dr. D. L. Richardson, Minneola, spent two weeks in Chicago last month attending a postgraduate course in surgery at the Cook County Graduate School of Medicine.

Dr. Ballard Hayworth, Topeka Medical Center, reported for active duty with the Navy at San Diego last month. Dr. Hayworth recently became a diplomate of the American Board of Internal Medicine.

Dr. W. F. Bernstorf, Winfield, addressed a recent meeting of the Sixth District Registered Nurses' Association at Arkansas City. His talk was based on the nurses' program for a 14-state area which includes Kansas.

Dr. C. J. Kurth, Wichita, was recently elected vice-president of the Mid-Continent Psychiatric Society, an affiliate of the American Psychiatric Association, for the 1953-1954 year. He will be president-elect of the organization in the 1954-1955 period.



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RESEARCH IN THE SERVICE OF MEDICINE **SEARLE**

Dr. William R. Durkee, Manhattan, has successfully completed examinations given by the American Board of Internal Medicine and is now a diplomate of that board.

Dr. William C. Menninger, Topeka, received the fifth annual achievement award of Cornell University Medical College. He was presented the award at a meeting held in New York City in April, and the subject of his address there was "Psychiatry and the Practice of Medicine."

Dr. Carl O. Tompkins, who formerly practiced in Hillsboro, is now practicing in Newton in association with Dr. Lee S. Fent and Dr. D. S. Klassen.

Dr. Robert Y. Jones, who has practiced medicine for 46 years, in Hutchinson since 1909, announced his retirement last month.

Dr. V. M. Winkle, of the Kansas State Board of Health, was named president-elect of the Middle States Public Health Association at a meeting held in Topeka in April. Dr. Thomas R. Hood, executive secretary of the Kansas State Board of Health, was chosen as president-elect of the Kansas Public Health Association at the same meeting.

Dr. M. R. Fitzpatrick, who has practiced in Kansas City since 1948, has been called to active duty with the Army. He reported to Fort Lewis, Washington, and was assigned to the medical corps with the rank of captain.

Dr. A. E. Bair, who recently returned from service with the Army in Germany, is now associated in practice with Dr. J. G. Hughbanks, Independence.

Dr. Edwin R. Maier has returned to practice at the Arkansas City Medical and Surgical Clinic after spending 21 months in orthopedic surgery at Lackland Air Force Base, San Antonio.

Dr. Frank E. Hoecker, Lawrence, and Dr. Homer L. Hiebert, Topeka, were authors of a paper, "Clinical Applications of Radioactive Isotopes in Small Hospitals," published originally in the JOURNAL last June, which was abstracted in the May, 1953, issue of *Radiology*.

Dr. C. W. Zugg, Great Bend, was principal speaker at a community celebration in Claflin last month honoring Dr. Herbert W. Jury, who has completed 50 years of practice there. The Barton County Medical Society presented a gold watch to Dr. Jury.

Dr. E. M. Seydell, Wichita, was made a senior councilor of the American Board of Otolaryngology at a meeting held in New Orleans recently.

Dr. John F. Coyle, Coffeyville, has been called to active duty with the air force, effective June 8. He reported for duty at Montgomery, Alabama.

Dr. James J. Basham, Eureka, discussed plans for a proposed hospital for Greenwood County at a meeting of the county advisory committee late in April.

Dr. W. Clarke Wescoe, dean of the University of Kansas School of Medicine, was one of the speakers at the 95th annual meeting of the Missouri State Medical Association, held in Kansas City last month. He described the Kansas rural health program.

Dr. Robert K. Purves, Wichita, was notified recently that he had successfully completed examinations given by the American Board of Surgery. He is now in military service and is stationed at Forbes Air Force Base, Topeka.

Dr. Eugene Myers, Iola, addressed the Business and Professional Women's Club there recently on the subject of multiple sclerosis.

Dr. N. C. McCubbin, Concordia, has opened an office in Clyde and will practice there each morning.

Dr. M. F. Stock, formerly on the staff at the state hospital at Osawatomie, has opened an office in Weir. The Boosters Club of Weir sponsored an open house on May 8 as a welcome to the new physician.

Taking part in a public meeting at Emporia on May 16, under the sponsorship of the Kansas Heart Association, were Dr. Clarence Erickson, Pittsburg; Dr. Don C. Wakeman, Topeka; Dr. John M. Porter,

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Concordia; Dr. Harold H. Jones, Winfield, and Dr. Lee H. Leger, Kansas City. Dr. Philip W. Morgan, Emporia, is president of the group.

Dr. George R. Lockett, who has been practicing in Glasco, moved to Moline last month and has opened an office there.

Dr. George Hopson, who has practiced in Liberal for 18 months, is now practicing in Plains, where he has taken over the Collingwood Clinic, formerly operated by Dr. William H. Burch who is now in military service.

Three members of the Sedgwick County Medical Society took part in a Career Conference sponsored by high schools in Wichita last month. Dr. C. T. Hagan spoke at St. Mary's High School, Dr. Howard C. Clark addressed two classes at North High School, and Dr. Robert H. Maxwell spoke at East High School.

Dr. Arnold F. Nothnagel, Kansas City, spoke on "Surgery" before the Kiwanis Club of Kansas City at a recent meeting held at the Town House.

Dr. Lucien R. Pyle, Topeka; Dr. C. F. Taylor, Norton; Dr. Ralph I. Canuteson, Lawrence, and Dr. George Jackson, Topeka, have been appointed to an advisory board to meet with a special legislative committee charged with the responsibility of choosing a location for a new Southeast Kansas tuberculosis hospital.

Dr. Clarence H. Benage, Pittsburg, was one of the speakers at a banquet held in that city recently in celebration of the 50th anniversary of Mt. Carmel Hospital.

Dr. Jack V. Sharp, Arkansas City, was chosen president of the newly organized Medical Veterans' Society of Cowley County. Dr. George L. Norris, Winfield, is vice-president, and Dr. Thomas L. Hill, Arkansas City, is secretary-treasurer.

In 1952, 37,600 Americans were killed in traffic accidents, and 2,090,000 were injured.

Survey of Public Relations Projects

A survey of public relations projects carried on by state and county medical organizations, made by the A.M.A.'s Department of Public Relations since the first of the year, indicates that progress has been made in many directions since January, 1951.

Seventy-four per cent of the state societies, and 83 per cent of the county groups, now have night and emergency call systems. All states have mediation committees, and 71 per cent of the counties have such groups. Work in the field of press, radio, and television relations is now undertaken by 91 per cent of the state societies and 77 per cent of the county units.

An average of 79 per cent of all county societies and 81 per cent of state societies took part in detection drives and allied health campaigns; nearly 70 per cent of both groups report they participated in other civic projects. For example, 85 per cent lent a hand to civil defense activities.

In the field of health education, 77 per cent of all county societies and 89 per cent of state societies have been active, distributing literature, maintaining speakers' bureaus, holding forums or public meetings, and placing medical exhibits at fairs and celebrations.

Film Available to Groups

A new black and white film, "And the Earth Shall Give Back Life," is available for group showings through E. R. Squibb and Sons, 745 Fifth Avenue, New York 22, New York. Filmed by Louis deRochemont, the picture tells the story of antibiotics, with emphasis on discovery and production. This 16 mm. film, with sound track, runs 25 minutes.

New Format for Lilly Bulletin

An entirely new format for the Eli Lilly and Company publication, *The Physician's Bulletin,* made its appearance recently. It is now published in "pocketbook" size with 32 instead of 24 pages, and is issued 10 times a year instead of every other month. Brevity is the keynote of the booklet. It is now being sent to 150,000 doctors in this country.

Streptomycin and PAS are not bacteriocidal but bacteriostatic. They do not cure or eradicate the disease (tuberculosis). Relapses occur and reconversion of sputum from negative to positive is frequent. They have markedly improved the prognosis of tuberculosis but have not controlled it.—*John H. Skavlem, M.D., West Virginia Medical Journal, December, 1952.*

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Steroid Hormones in Geriatrics: A Review*

Fount K. Hartley, Senior Student
University of Kansas School of Medicine

The normal process of aging entails many gradual changes within physical and mental spheres. Several of these changes are visible ones; however, they have basic origins which lie nearer to the body's dynamic regulating mechanism. Steroid hormonal changes during the process of aging are being investigated extensively at present. From the fields on endocrinology and gerontology has come new thought regarding the aging phenomenon. This paper represents an attempt at reviewing some late work with steroid hormones in geriatrics. In this discussion, we will cover the endocrinological and histological patterns during aging, some of the mechanisms which bring about aging and the pathological processes associated with senescence, and some possible corrective measures, with summary and conclusions.

ENDOCRINOLOGICAL AND HISTOLOGICAL PATTERNS DURING AGING

The aging process is correlated with a slow withdrawal of some vital hormones from the system. Normally, during youth, the body enjoys a nice balance between the internal secretions. When one begins to age, the balance is upset because some glands decrease in secretion, other glands exhibit compensatory overproduction, and still others produce an abnormal secretion.

Age heralds some disease entities which are due to maladaptation to new hormonal relationships. Human beings show subjective signs during these maladjustment periods. Men show lack of energy, moderate mental depression, and a reduced sexual activity. Women exhibit a reduced estrogen supply by experiencing hot flashes, tiredness, mental depression, and nervousness. These symptoms, especially in the female, are thought to be due to a marked shift in the stability of the autonomic nervous system. Although these symptoms usually run parallel to the increased gonadotropin level, they do not necessarily do so and are perhaps better thought of as a manifestation of estrogen deficiency.

Aging is brought about by a combination of histological changes in the glands with a concomitant reduction in glandular function. Histologically, there is a general collagenous replacement of the functional parenchyma. In the gonads, there is a thinning of the epithelium and of smooth muscle, giving support to the idea that aging is slow castration. The pituitary reveals vacuolation of basophilic elements, an increase of reticular fibers around sinusoidal capillaries, and a decrease in structural eosinophils. These changes are reversible by the administration of testosterone and estrogen.

Estrogen in small dosages stimulates the eosinophil production and increases the leutenizing hormone level. If the estrogen is in very large dosages, all gonadotrophic hormone is suppressed. In the adrenal gland, the collagenous change is highest in the zona reticularis and lowest in the zona fascicularis. Changes in the fascicular and glomerulosa zones have been found to be partially reversible in female rats by the administration of estrogen, progesterone, and androsterones.

The thyroid does not produce a known steroid hormone, but its activity in the hormonal system demands mention. Age change in the thyroid is one of diminished follicle size with atrophy of the epithelium, partially reversible by the use of sex hormones. Hashinger believes that thyroid function definitely decreases with aging and that the keen estimation of the clinician is still the most accurate measurement of function. The fascicular zone of the adrenal cortex is closely related to the thyroid. Lowered adrenal function and hypothyroidism is called the Schmidt syndrome. A "slowing" thyroid, if responsive to good adrenal activity, develops hyperthyroidism.

There are many known steroid hormones at present. It is obviously impossible to discuss all of them completely, so we will deal only with the ones which seem most important, namely, androgens, estrogens, and adrenal corticoids. The androgens have their origins in the interstitial cells of the testes and the adrenal cortex. The estrogens come from the ovaries, adrenal cortex, and the Sertoli cells of the testes. The corticoids are from the adrenal cortex and are found in both males and females in varying amounts.

In human beings the excretion of 17-ketosteroids is a fair measure of androgen production. This statement is supported by the high and low excretion of 17-ketos in adrenal cortical tumors and Addison's disease, respectively. Both androgenic and nonandrogenic 17-ketos are gradually reduced with advancing years. The following graph explains why

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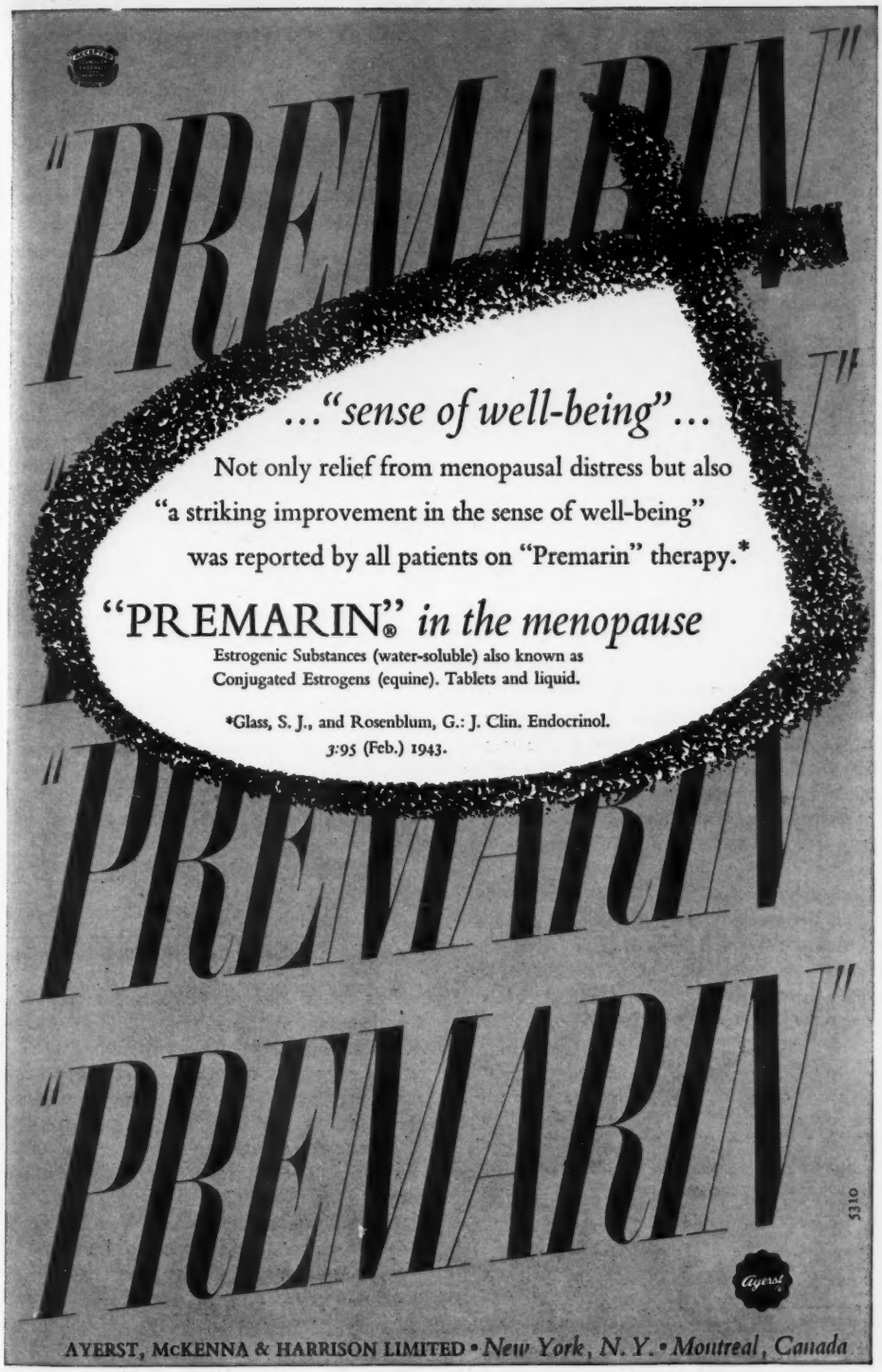
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men don't have a true climacterium. It represents a gradual withdrawal of the hormone.

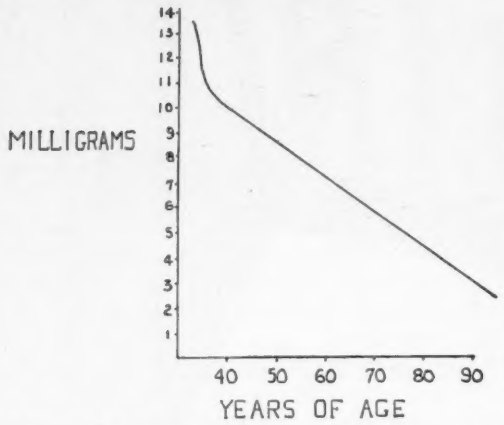

Figure 1. Neutral 17-ketosteroid comparisons of the 24-hour urine excretions of men of various ages (From Kirk, Journal of Gerontology, Volume 6, July 1951).

Androgen decreases in women also, which probably reflects a slowing down of adrenal cortical function. Men have a peak of 17-keto excretion at 25 years of age. Aged men show a mean ketosteroid excretion approximately 40 per cent of young adult males, while aged women will excrete 60 per cent of the amount of younger women. Among the younger groups, females excrete 55 per cent of the amount of males. In the aged group, women excrete 80 per cent the amount of males. The proportionate decline of androgen and androgen-like functions during aging is found to be greater in males. No correlation between ketosteroid excretion and body weight of habitus could be found, except for an anticipated decrease in excretion in subjects 15 per cent or more below ideal weight.

Estrogen values fall sharply from a high level during the reproductive period of life to a low level during the menopause. In men the excretion is nearly stable.

TABLE 1.

THE 24 HOUR URINARY EXCRETION OF ESTROGENS IN 237 MEN AND 253 WOMEN

Age	*Total Estrogen* MEN	*Rat Units/24 hr.* WOMEN	
17-29	11.7	38.2	
30-39	13.8	38.9	
40-49	12.3	21.3	
50-59	13.7	10.8	
60-69	12.5	6.7	G. Pincus
70-79	12.4	7.3	
80-96	10.5	6.7	

(From Kirk, Journal of Gerontology, Volume 6, July 1951.)

It is believed that the primary fault of sex hormones in regard to their failure lies in the parenchyma of the target organs, e.g. testes and ovaries, because there is a demonstrable overproduction of gonadotrophin from the pituitary. However, aging also affects pituitary function. Solomon and Shock showed that after epinephrine injection there is a significantly greater eosinopenia in young than in older persons. No difference in eosinophil count was noted after ACTH administration. It was concluded from these studies that the adrenal cortex is responsive to ACTH, is not remarkably impaired in senescence, and that the pituitary's response to epinephrine is moderately reduced in the aged. It is widely observed that old persons do not respond to acute stress as do younger individuals. Either less ACTH is put out by the pituitary, or there is primary degeneration of all body tissues producing functional changes independent of the degree of hormonal stimulation. At all ages, the lability of the pituitary-adrenal system indicates that pituitary hormones and adrenal hormones are both rapidly released and consumed.

It has been mentioned that a balance of hormonal activity is necessary for normal body function. Androgen/estrogen ratio studies have produced interesting observations.

TABLE 2.

THE ANDROGEN/ESTROGEN RATIO IN 204 MEN OF VARIOUS AGES

Age	*Androgen/Estrogen Ratio**
17-29	13.9
30-39	10.9
40-49	——
50-59	7.0
60-69	6.4
70-79	6.9
80-96	2.6

*Androgens: Ketonic androgens expressed as milligrams androsterone equivalent per hour multiplied by 1,000.
*Estrogens: Total estrogens in rat units/24 hours.

G. Pincus

(From Kirk, Journal of Gerontology, Volume 6, July 1951.)

This graph shows that in men the ratio is gradually decreased with age. This leads to certain feminization of male organs which are sensitive to increased estrogen stimulation. Prostatic hypertrophy of advancing years is believed to be due to stimulation of the lateral lobe. This lobe is under regulation of both male and female hormones, i.e. an ambisexual receptor. Gynecomastia is frequently seen in older men.

The following statements apply to the pre-climacteric and are basic fundamentals of hormonal activity.

1. Estrogen serves as a regulator for the production and release of pituitary gonadotrophin. Large estrogen doses suppress all gonadotrophic activity, small doses increase follicle stimulating hormones (fsh), and still smaller amounts stimulate the leutenizing hormone (Lh). Thus, we see how there

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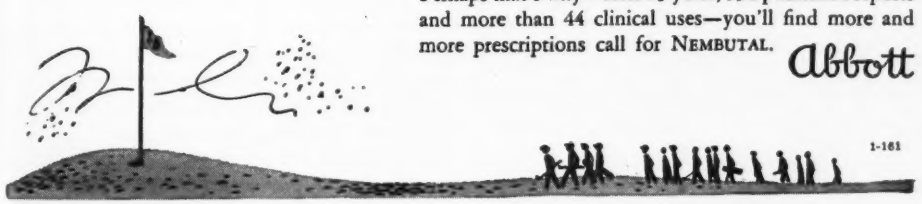

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is a shift from the ovary to the adrenal gland for hormonal sustenance.

2. Estrogens stimulate the formation of ACTH while androgens suppress it, as shown by the hypertrophy of the adrenal gland cortex in male castrates. During the normal sex life, the large amount of estrogen suppresses Lh, which lowers the sex-linked steroid production by the adrenal zona reticularis. The high estrogen level stimulates ACTH to produce 11-oxys, or glucocorticoids, which are instrumental in maintaining youthful appearance and function.

Estrogen also has a synergistic effect upon somatotrophins in control of mineralocorticoids, their formation, and release. In connective tissue, for example, the injury responses of the glucorticoids and the mineralocorticoids are a combination of complementary and opposing factors. The mineralocorticoids seem to be the "hormones of defense" and the glucorticoids the "hormones of healing." The former hormone favors the deposition of hyalin, and the latter favors the removal of hyalin. Normally, the three layers of the adrenal cortex are stimulated in a balanced manner, and the influence on the target gland is therefore a healthy one. Waning gonadal activity appears to initiate alterations in other glandular activity.

It has been stated that there is a sharp reduction of estrogen during the menopause. This is generally true, although symptoms may not always parallel the diminution. There is a bleeding threshold in the uterus and, although other subjective signs of menopause are evident, this threshold may be reached and bleeding may continue. There is a close association between the ovary and the uterus, and the function of one is clearly reflected in the other. When one removes the uterus, 40 per cent of women undergo a decline in ovarian function within a 6 to 18 month period.

During the menopause the estrogen supply is low and the gonadotrophin (chiefly fsh) is high. However, there is generally enough circulating estrogen to stimulate the adrenal zona reticularis to produce estrogen and androgen-like materials. This idea has been substantiated by a temporary increase in 17-ketosteroid excretion postmenopausally, although the general trend is downward. Thus, the loss of anabolic or anti-catabolic effects of sex hormones is compensated in part by the supplement of the adrenal cortex which has been called "the gonad of the aged."

SOME OF THE MECHANISMS WHICH BRING ABOUT AGING AND THE PATHOLOGICAL PROCESSES ASSOCIATED WITH SENESCENCE

It has been learned that once past middle life, an individual partially shifts his sex hormone supply to the adrenal cortex. He will either adapt in the usual way, exhibiting normal aging attributes, or suffer a maladaptation with ostensible pathologic reactions.

A workable explanation of the aging process has been offered by Selye in his "adaptation syndrome." The sequence of events in the syndrome can be amplified as follows: the large amount of "sugar" hormone which is produced by the adrenal cortex as a result of stress inhibits the "nitrogen" and the "desoxycorticosterone-like" hormones; this prevents the systemic accumulation of protoplasm and of extracellular fluid. When the excess production of the "sugar" hormone ceases and the inhibitive action disappears, the "nitrogen" and the "desoxy" hormones are produced in increased amounts, which stimulates the systemic anabolism of protoplasm and the re-establishment of electrolytes and water balance during the period of convalescence.

The concept of the "adaptation syndrome" provides another addition to the homeostatic mechanisms which are set in motion in an effort to maintain the optimal condition in the individual. It is apparent that there are conditions in which this homeostatic mechanism does not function properly. Thus, there has been developed the concept of "diseases of adaptation." These diseases may involve defective or abnormal interrelationships between the central nervous system, the anterior pituitary gland, the adrenal cortex, and the body tissues.

The disturbance in adaptation may be manifested during the stage of the "alarm reaction," the "catabolic," or "anabolic" phases, in regard to aging. In these diseases of adaptation, Selye has summarized evidence connecting certain cases of cardiovascular disease and arthritis with an overproduction of mineralocorticoids. It will be remembered that these mineralocorticoids (desoxycorticosterones) are relatively out of control of the anterior pituitary. These hormones are generally the chief offenders. Their relative autonomity is borne out by the fact that electrolyte balance is not greatly disturbed in cases of panhypopituitarism.

Selye used 15 subjects (both men and women) with symptoms which first appeared during or after the climacterium. In subjects with the hypertrophic form of arthritis, 77 per cent showed an abnormal response to ingestion of desoxycorticosterone-acetate and salt, 50 per cent showed a lowered basal metabolic rate, 25 per cent exhibited a low level of 17-ketosteroid excretion, but there were no changes in 11-oxysteroids. In patients with hypertension, 80 per cent exhibited an abnormal response to ingestion of salt and DOCA, constituting the only change in these patients.

It has been shown that the cardiovascular system

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is sensitive to deprivation of sex hormones, especially estrogen. Some patients develop hypertension, i.e. cardiomegaly, coronary changes, and kidney disease. Capillary fragility is present, and the vessels are labile, contracting and dilating with minor degrees of excitement producing flushes and sweats. The electrocardiograph shows irritative changes in the myocardium. Many of these changes are reversible by estrogen therapy.

These studies reveal an overproduction or at least an imbalance of mineralocorticoids and other controlling hormones. In patients who presented findings of diabetes mellitus, Achard-Thiers syndrome (i.e. hypertension, hirsutism, diabetes mellitus, and obesity—all at the menopause), and osteoporosis, the findings are those of a mild Cushing's syndrome. All these symptoms result from too much glucocorticoid and too little mineralocorticoid. There is evidence of overproduction of 11-oxy or glucocorticoid hormone in 61 per cent of the patients tested.

Other diseases exist which are generally associated with the aging process. One of these is carcinoma of the prostate. It has been shown that the posterior lobe is chiefly under the control of the male hormone and that the middle and lateral lobes are ambisexually stimulated. There is degeneration of the cells of carcinoma of the prostate with large doses of estrogen. Both nodular hyperplasia (ambisexually stimulated) and carcinoma (posterior lobe) occur at a time when the androgen and estrogen levels of the body fluids are decreasing. These new growths are extremely rare in castrated men.

The suppressive effects of testosterone on carcinoma of the breast and cervix and the suppressive effects of estrogens on metastasizing carcinoma of the prostate are widely known adjuncts of modern therapy. The sequence of events for the pathologic physiology of "diseases of adaptation," if correct, would provide an explanation for the beneficial effects of the administration of ACTH or the "sugar" hormone (Cortisone), since these agents would bring about an inhibition of the production of the "desoxycorticosterone-like" hormone and would induce a progression of the disease through the "catabolic" phase into the convalescent or "anabolic" stage with ultimate recovery.

The demonstration in some of the "diseases of adaptation" that the adrenal cortex is normally responsive to ACTH and that the pituitary is normally responsive to epinephrine with the production of ACTH (although sometimes delayed), favors the interpretation that the locus of the "block" or "resistance" in these diseases is between the site of local injury and the central nervous system.

SOME CORRECTIVE MEASURES

One of the leading journals of gerontology has as its motto, "To add life to years not years to life." This is the aim of every person who administers replacement therapy and corrective hormones to the aging. There obviously is a metabolic process of aging during the menopause (or adrenopause). This process is due to the withdrawal of both "male" and "female" hormones which are essential for normal metabolic activity in both sexes. These are not "sex hormones," in a literal sense, because they have action on protein and nitrogen metabolism, electrolyte and water balance, mineralization of bone, and cardiovascular and nervous function.

The lack of response of an organ to steroid hormone stimulation is due to the fact that the hormone has no specific effect on that organ or that there is a loss of ability to respond (on account of age changes) to an otherwise normal stimulus. Of course, one must assume that the hormone is produced in sufficient amounts, which is usually not the case.

Steroid therapy can usually be divided into the effects on (1) the generative organs and secondary sex characteristics, and (2) the action on the non-generative organs. In administering androgens one notices an improvement in sexual function (potency), possibly from an improved tone and development of the ishchiocavernosus and bulbocavernosus muscles. There is an atrophy of these muscles in castrated rats. It has been observed, in giving androgen for the male menopause, that much larger amounts of androgens are required to inhibit fsh than estrogen. Some therapists give estrogens to inhibit fsh, and then androgen in addition to enable the patient to have erections. On this therapy the patients seem considerably improved.

The effect of testosterone on the secondary male characteristics, e.g. the beard, shows a definite increase in old, castrated, and hypogonadic men.

Among the changes of the non-regenerative organs from testosterone administered is nitrogen retention with increased protein snythesis and weight gain which exhibits the anabolic and antiaging effects of androgens. A weight gain of .8 to 10 pounds over a 4 to 8 week period was seen in emaciated men past 70 years of age. There was usually an increase by performance tests. This beneficial effect, however, disappeared within a few weeks following withdrawal. This demonstrates the hormonal effects on aging but is discouraging as a treatment for combating aging.

Goldzieher believes the climacterium in both sexes to be primarily a metabolic disorder dependent upon a decrease in steriod hormone secretion. This concept is upheld by the fact that characteristic clinical symptoms sooner or later subside spontaneously in both sexes. However, without arresting the meta-

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bolic disorder, the senescent process continues apace. He believes that testosterone corrects the climacteric symptoms but allows the metabolic disorder to proceed. Finally, the testosterone loses its potency due to continued repression on androgens secretion in the adrenal cortex. Goldzieher opines that a potent cortical extract seems to be most helpful in maintaining a continued response to testosterone therapy.

The female menopause is more precipitious than the male and therefore generally more severe. There has been a great deal of investigation concerning replacement and substitution therapy with steroid hormones. Besides many subjective findings, several objective signs are exhibited postmenopausally. There is a gradual decrease in the thickness of the skin and the size and tone of the muscles; the vaginal mucosa atrophies; the endometrium and breasts show regressive changes, and there is a decrease in bone matrix formation by the osteoblasts. The condition of osteoporosis is a troubling consequence of aging which manifests itself generally in a matter of five or six years after the menopause, at which time a clinical degree of disability has developed, e.g. a collapsed vertebra or a fractured hip.

Many ideas of the disease mechanism have been offered. Allbright believes that one of the consequences of increased protein breakdown may be a reduction in the amount of organic matrix with a resulting osteoporosis, not a disorder of calcification. Following estrogen or androgen therapy, an increased amount of organic bone matrix is laid down, osteoblasts proliferate, and then calcification occurs. To bear out the concept of the inability of an organ to respond to a stimulus it is cited that young hypogonadic men show an increase in acid phosphatase when on testosterone therapy. This is evidenced by an increased acid phosphatase in young men and no response in old men.

In providing therapy for postmenopausal women, it has been necessary to perform tests on many facets of the problem of aging, e.g. the effects on skin, uterus, and the psyche. It appears that the older age groups (64 to 82 years) proved to be more interesting than the younger ones because the process of aging had been at work longer and the reversal of the process was more noticeable. Goldzieher showed that within six weeks after the application of an ointment containing 1 mgm. of estradiol per ounce, there resulted a striking increase in the number of surface layers of epithelium and epidermal pegs. In the cutis there were increased capillaries and decreased fragmentation of the collagen fibers, coupled with an increase in elastic fibrils. Estrogen application in both men and women was followed by a significant improvement in skin resiliency of an estimated 15 years rejuvenation.

The injection of estrogen (1 to 3 mgms. weekly) can provoke uterine bleeding in senile women either by intermittent withdrawal of estrogen or by supplementing progesterone administration. The uterine wall becomes succulten and receives many newly developed arteries.

Kountz made observations from autopsied uterine arteries in women of the same age with similar gynecological histories. Some of these women had received replacement therapy for as long as six years, while others had received no therapy. There was a lessening of the arteriosclerotic process in the treated women, suggesting that causes of arteriosclerosis may be a reduction of the physiological activity of the organs. During estrogen therapy, the vaginal epithelium becomes cornified and cyclic accumulations of glycogen occur, which corrects much vaginitis, pruritis, kraurosis, and dermatitis. The breasts also show an increase of glandular tissue.

There are no convincing statistics that estrogens administered to old patients increases the incidence of neoplastic disease; in fact, there is some evidence that some of the forms of neoplastic disease in older women respond favorably to estrogen therapy.

A fact which has caused much optimism was discovered from experiments on the non-generative organs. It was found that nasal mucous membrane was restored to its youthful ciliated, columnar epithelium. There were more nasal glands and augmented vascularization of mucosa and submucosa. Since atrophic changes have been demonstrated as being capable of restoration, there is a possibility that other organs may be made to respond if the adequate stimulus can be developed.

The pancreas exhibits old age changes by some diabetic flare-ups. It is likely that psychic changes are responsible for most latent diabetes postmenopausally. Estrogens have alleviated the diabetic conditions. Arthritic flare-ups are partially attributed to lowered pain threshold and partially to the usual increase in weight.

Interesting results have been obtained by Caldwell and Watson studying a chief problem of the aging person, namely that of his changing psychological attitude. Thirty aged women (mean age 75.17 years) were selected for a study designed to investigate the psychologic effects of female sex hormones. Half of the patients received hormones (estrogen and progesterone) controlled in such a way as to induce cyclic bleeding, while the other half received injections of mineral oil. Psychologic testing was performed before the hormone therapy was begun and again after six months of administration.

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thought processes, environmental interests and activity, contact with reality, and motivation. Results show improvement in ability to think and expend intellectual energy. Memory seems definitely enhanced, particularly with respect to meaningful material. There was no general shift toward a more favorable attitude toward other people. Hormonal therapy is not a panacea for all the mental ills and infirmities of old age, but the results are distinctly provocative.

The treatment of the menopause consists of medical therapy, phychotherapy, and hormonal therapy. Hormonal replacements, sedatives, and reassurance that the menopause is not pathologic within itself constitute the most effective array of present treatments.

The rate of hormonal absorption is important because hormones are destroyed by the liver if not taken up by the tissues within a certain length of time. This fact makes it necessary that the patient have an individualized dose. One may use several different regimens in administering estrogens. Three ways are suggested: 1. Estrone 1 mgm. intramuscularly 2 to 3 times weekly, supplemented by stilbesterol 0.25-1.25 mgm. daily during the second week, then oral therapy alone (stilbesterol). 2. The oral route immediately, 0.25 mgm. stilbesterol daily, doubled weekly until a therapeutic response is obtained. 3. Estradiol benzoate or propionate 1 mgm. weekly until there is a response, then at lengthening intervals.

Any untoward effects of overstimulation by estrogen, e.g. sore breasts or uterine bleeding, can be alleviated by decreasing the dosage and giving testosterone 25 mgm. intramuscularly until symptoms subside. In order to stimulate the normal hormonal cycle, the hormone is given for 20 days, then interrupted for approximately 5 days. If the women is having periodic menses, it is well to give the hormone for a period of 20 days beginning on the day after the period ceases. In older women who have stopped menstruating, the apprehension which would result from a return of the menses can be largely nullified by preparing the patient with a preceding explanation of the procedure.

Testosterone may be given as the propionate intramuscularly, 5 to 25 mgm. every 2 or 3 days, until improvement occurs, at which time the dosage should be gradually reduced to maintenance levels of 10 mgm. of methyl testosterone 1 to 3 times daily as the sublingual or oral tablet. For menopausal therapy, the dosage is approximately 25 mgm. intramuscularly every 1 to 2 weeks.

Such a beneficial and benign procedure as replacement therapy is not without certain deficiencies: 1. No actual increase in longevity is reported. 2. All senile deficiencies are not affected alike, thus the uneven restitution may even endanger the condition of the patient. For example, testosterone may increase strength and activity to a point sufficient to precipitate a cerebral or cardiac accident. However, at present the danger seems minimal in comparison to the beneficial effects of steroid hormonal therapy.

SUMMARY AND CONCLUSIONS

1. An attempt to give an endocrinological and histological picture of the aging process has been made.

2. Some of the mechanisms of aging are discussed with emphasis on the diseases of adaptation.

3. The effects of replacement therapy with steroid hormones have been enumerated.

4. The loss of the sex hormones from the gonads during aging is partially compensated for by the supplement of the adrenal cortex which has been called the "gonad of the aged."

5. Restoration and rejuvenation of tissue has been induced by the administration of replacement hormonal therapy.

6. Better methods of appraisal of the type of imbalance are needed. For example, in the secretion of the various layers of the adrenal cortex, if one could determine the state of balance between the glucocorticoids and the mineralocorticoids more readily, the correct type and amount of balancing supplement could be given. This would aid in forestalling or checking the existing disease of adaptation.

7. Each patient needs an individualized dose of hormone to meet his specific demands.

8. There is believed to be a primary degeneration of all body tissues producing functional changes independent of the degree of hormonal stimulation.

9. The fact that in some individuals the pituitary-adrenal system is found to be intact, yet diseases of adaptation develop, favors the interpretation that the locus of these diseases is between the site of local injury and the central nervous system.

10. The process of aging seems to be a metabolic disorder which requires more correction than the mere correction of subjective symptoms of old age.

11. Hormonal therapy is not a short-term therapy. It is extended and requires careful regulation.

12. Steroid hormone therapy definitely adds life to years and should be given to all old persons suffering from the diseases and distress of old age. There is evidence of better mental and physical health with the important extended years of usefulness to a world encumbered by the growing load of an aging, non-productive population.

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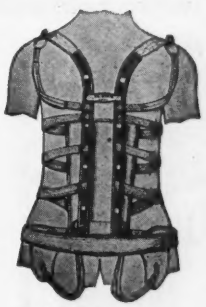

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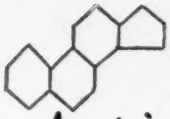
The symbol SCHERING denotes leadership in steroid hormone  research and manufacture -- including Cortogen in the most useful clinical forms.

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